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THE LEADING MAGAZINE OF AIR PROGRESS AND AEROMODELING

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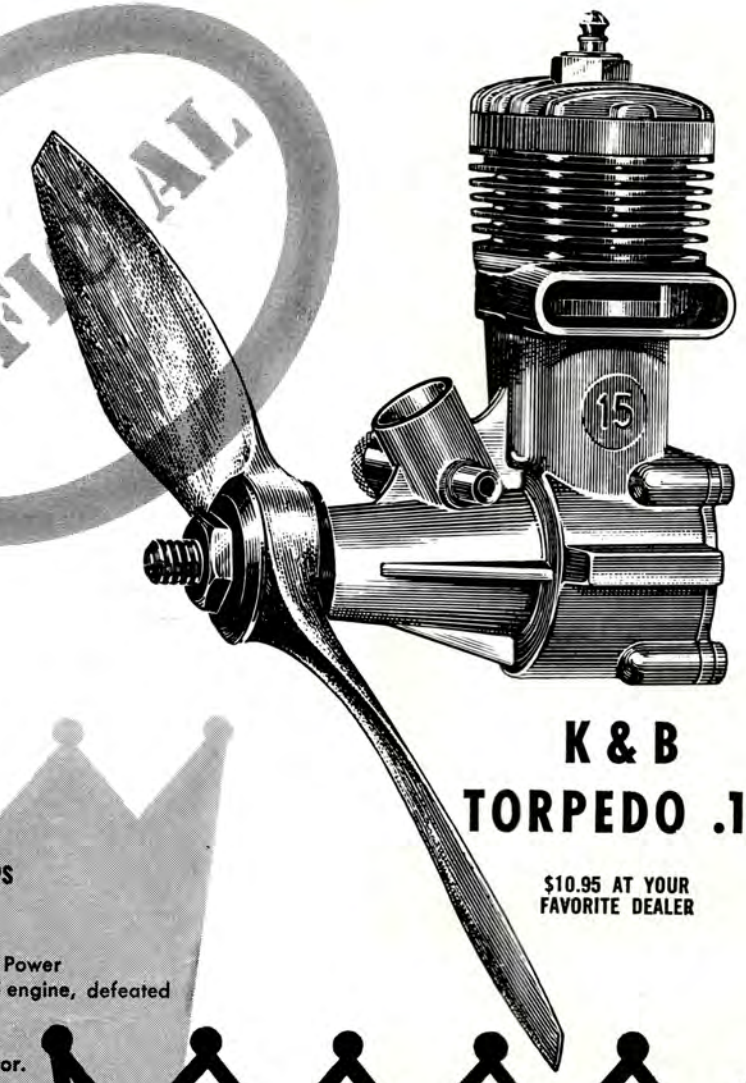

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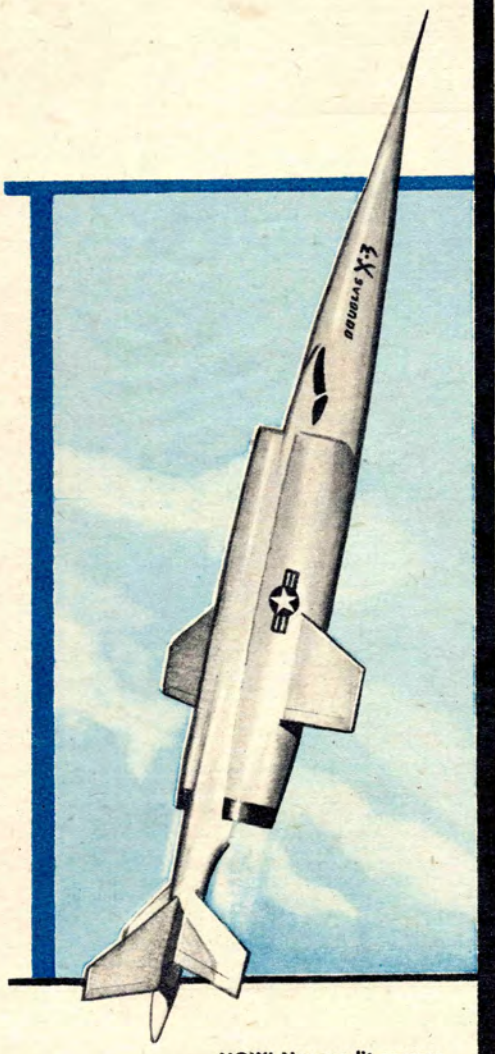

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Cover: Douglas X-3 research plane. As speeds begin to exceed 1000 mph the airplane design veers gradually away from aircraft shape to that of projectile.

MARCH 1954 • Vol. 41, No. 6

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FROM THE READER

Interested in JAF? . . . The Japanese Air Force article in Air Progress was one of the finest of its type I've ever seen. So little really good information is available that it was a joy to see it as it was presented. I have spent a great deal of time and effort attempting to assemble a complete listing of all Japanese aircraft, including 3-views, but have been stumped in many cases. Such questions as the Army "Ki." numbers of the S.91, S.92, LB.93, OB.93-1, OB.93-2, etc., and the Navy designations of the S.83, S.90, KT.90-2, "Toka," "Kikka," etc. are difficult to answer. I would like to contact other Air Trails readers who are interested in the same subject.

Richard M. Bueschel,
414 N. Prospect Manor Ave.,
Mt. Prospect, Ill.

Scale Fan Request . . . It is a pleasure to enclose my check to renew my subscription to your excellent magazine, which seems to cover all branches of the hobby very thoroughly.

Though I do not have the time to build models as I used to, still it is a pleasant pastime to keep up with the progress made in the sport. Even though I am at the present unable to do any active building, I am building up a library of "AT" plans of models that interest me, so that when the happy day arrives when I can work at my favorite hobby, I will be able to build the models I desire.

In past issues Walter Musciano has given us scale fans some beautiful World War II "triplets." I personally would like to see him commissioned to do the three outstanding fighter planes of World War I—the Spad, the SE-5 and the Fokker D-VII, to the same ¾-inch scale as rest of series.

Roy Grayson, Cincinnati, Ohio

Jim Walker's Flight Plan Contest . . . I read your article on Jim Walker's Flight Plan Contest and I, like Mr. Raymond, thought that it was for U-control planes. Imagine my surprise, when reading in the "Dope Can" in the January 1954 issue, that I found out it was for free-flight models.

Why couldn't this system be used for both free-flight and U-control models competing together? With a few changes this system would allow free-flight and U-control models to compete against each other on equal terms.

Charles W. Chapoton, Jr., Aiken, S. C.

Transcontinental Service . . . In the Air Notes in the Jan. 1954 issue you said that TWA was the first to inaugurate non-stop transcontinental passenger service. TWA's Super Connies can only go non-stop L.A. to N.Y. On the return trip the planes stop at Chicago, due to headwinds and the rotation of the earth. AA's DC-7s can go non-stop either way. You have a fine magazine and let's see more of it.

Milton Bollis, Chicago, Ill.

Plans for B-17 G or F? . . . I am particularly interested in this Fieseler Storch (on Hobby Helpers' #453 group of plans). Had five of them in my care in France during WW II. A very versatile ship if I ever saw one. Wondered for a long time if anyone would be able to get the plans for same.

This is, to my knowledge, the first letter I have written to A.T. Have enjoyed this magazine since some time in the '30s. I built a good many models from your plans.

Do you suppose any of your readers would know where I could obtain a set of plans for the B-17 G or F? Would like to make a medium-size super scale job of same. Have just started modeling again after a lapse of about 10 years. It's good to get back to it.

Ronald H. Tyler, Auburn, Me.

Those Valuable Back Copies . . . For the past 10 years Air Trails has been one of the finest magazines dedicated to aviation and aeromodeling. I recently purchased 2-year subscription to your magazine, and I am impatiently awaiting the first issue.

During the years of World War II I collected nearly 300 of the top aviation magazines, and included was almost every issue of Air Trails. But unfortunately after I left home to get married my father, thinking I would have no further use for them, gave them to the scrap paper drive in his community.

I have built quite a few models in the past 10 years and I am now experimenting with retracting landing gears of scale controline models. I am also building a super detailed model of the Focke-Wulf Fw-190 from your plans in the September 1953 issue, and I would like to know if I could obtain information on this airplane.

During the war I believe your magazine had quite a few articles on it and Air Progress carried cutaway drawings of this particular aircraft, and I would like to know if this material is obtainable.

George Ehlers, Westbrook, Conn.

• Back copies of wartime issues of Air Progress are no longer available. For information on available back copies of Air Trails (which start with the February 1934 issue) send a stamped self-addressed envelope to us.

Russian AF . . . In past issues of your monthly periodical I have been following with extraordinary interest your articles and drawings regarding the Russian Air Force. I've found your sketches and three-view detail drawings regarding Russian aircraft helpful and I must compliment you upon their authenticity.

If it is at all possible, let's have more articles and drawings about the Russian Air Force in the future.

Nicholas Nestor, Cleveland, Ohio

All communications to the editors should be addressed to 304 East 45th St., New York 17, N. Y. **Subscription prices:** U. S. and Possessions—$3.50 per year, $6.00 for two years; Canada—$4.00 per year, $7.00 for two years; countries of the Pan American Union—$7.00 per year, $10.00 for two years; elsewhere—$10.00 per year, $14.00 for two years. **Please advise us if you move,** giving old address and new address; allow four weeks for change of address; address all subscription mail to **Air Trails Subscription Department,** 304 East 45th St., New York 17, N. Y.

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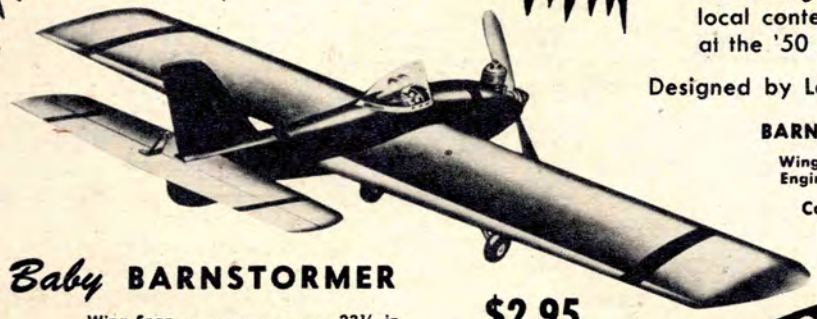

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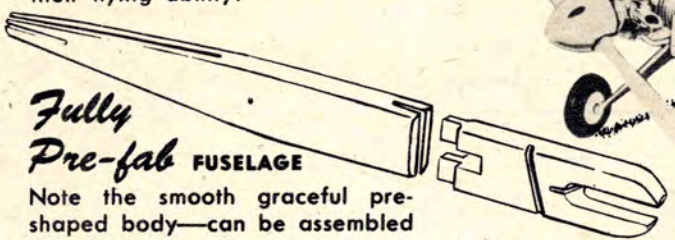

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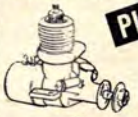
PLUS  ROYAL SPITFIRE .065

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Nieuport 17C World War I 41-inch biplane (left) and 42-inch Sopwith Camel, both scale free flights with .065 Royal Spitfire engines by Warren Watson, Baldwin Park, Calif.

Modelplanes Will Get Big Play in New "AT"

■ What with all the announcements, news releases and talk about "the new Air Trails" we've been hanging around the editorial HQ to find out what's wot. All sounds pretty good to us. Your new "AT" will have more pages, more features, plenty of modeling and will be titled "Air Trails Hobbies for Young Men."

First thing we wanted to know, of course, was how about model planes? Plenty of evidence that air-modeling will play an important part in AT-Hobbies. Next issue starts on a 3-part series of articles by Walt Good—Doctor Good, that is—covering his new radio controlled airplane ("Wag"), his new 3-tube receiver and his new transmitter. Then we were told there's such choice items scheduled as Earl Witt's built-up profile (!) combat model, a new control line scale by Walt Musciano, inside tips on how to fly a better stunt pattern by the National Open stunt champ, and on and on.

At that point we said, "Stop—enough! We're convinced. Say no more. We'll go back to our work bench and await the April issue with great interest."

International Competition. Had a nice communication from Howard L. Robinson, Shelby, Ohio's gift to model aviation. Robbie is serving on a special committee with Pop Robbers and Pete Vacco to formulate plans for setting up a permanent American International Competition Committee within the framework of the Academy of Model Aeronautics "to foster and administer competition in the international competition events in the U.S.A." Very commendable.

Apparently one aim is to line up sufficient finances to ensure a good F.A.I. gas and Wakefield event here in the States next Summer. One I.C.C. member would act as Financial Chairman, another would be the Rules Chairman, another the Competition Chairman and a fourth serve as the I.C.C. Chairman.

If you're interested in international flying you should be anxious to help. You can contact Mr. Robinson through the A.M.A. in Washington.

Use only the Best Wood. That's what Mel Dittman always said. That's Sergeant First Class Mel Dittman we're talking about, the chap who's with Company A of the 89th Tank Battalion (25th Infantry Division) in Korea. When a Company-wide model plane contest was announced Sgt. Mel found himself fresh out of balsa wood and couldn't get more soon enough to do any good. Next best substitute he could lay his hands on was wood from egg crates.

You know the answer surely—Mel's models were judged to be the best looking and they out-flew all others.

From the Tree of the Cherry. T/Sgt Don Watson wrote from Korea; his message concerned cherry wood—a popular ingredient in Japanese control line kits. Don, stationed with the 75th Air Depot Wing of the USAF, provides some informative dope on those big Jap-made multi-engine kit models we've been seeing.

"I am planning to purchase a Japanese kit for a seven-foot model of a B-50. Another airman at this Korean station is now building this same model and estimated that the weight will come to over twenty pounds. I thought this may have been a high estimate, but of course he has to use cherry wood (the entire model is planked with it), and cherry wood doesn't begin to compare with balsa in weight-saving. He is fitting his model with four O&R .33s, and plans to use eighty foot lines.

"However, rather than have to leave an expensive finished model here when I can return to the U.S., I thought I would ship the kit home, where I can obtain balsa, and not use the cherry wood furnished with the kit. Balsa, by the way, is impossible to obtain here.

"It may interest you to know that these Japanese kits are very well turned out and complete in every detail. The wing ribs and fuselage formers are completely cut and formed, and actual blueprints are furnished which show every detail. That B-50 kit, by the way, costs $21.50 and is complete even to having the main landing gear mounted in sturdy coil springs to absorb landing shocks."

Gotta Admire Those British. Everything, including aeromodeling, is kept so tidy in England. Maybe it's because the country is much smaller than ours? But you've just got to take off your hats to our British cousins. Already they have the time (June 5-7) and the place (R.A.F. field, Waterbeach, Cambridge) of the 1954 British Nationals. Over here what do we hear of the '54 Nats? At press time—not a thing.

But the British version of the A.M.A.—Society of Model Aeronautical Engineers—has just begun to accept individual memberships. Previously you had to belong to an affiliated club for S.M.A.E. recognition. Now anyone interested in air-modeling can be an associate member of the Society.

There is sort of a familiar ring to the S.M.A.E.'s epoch-making announcement which was titled: Landmark for British Aeromodeling. "For more than 30 years the S.M.A.E., oldest organization of its kind in the world, has governed model aeronautics in Great Britain, under authority delegated from the Royal Aero Club . . . while no statistics are available for Great Britain, it is known that in the United States (*Continued on page* 10)

You Ask

"AT" answers

Did Mustang Prowl at Night? . . . I would like to know if the F-51, during the last war, was used as a night fighter, and if so, was it painted black?

C. Lynch, Tiffin, Ohio

• The F-51 was *not* used as a night fighter during World War II.

Thunderbolt Specs . . . What is the armament of the F-47 Thunderbolt? What is the gross weight of the P-47 and the F-51 Mustang? Has the Martin XB-51 been dropped, or is it still in the experimental stage?

Andrew Fabian, Larksville, Pa.

• The F-47 Thunderbolt was armed with eight caliber .50 machine guns; its gross weight was around 16,000 lbs. The F-51 weighed around 12,000 lbs. The Martin B-51 is still in the experimental stage.

McDonnell XP-67 in Combat? . . . I would like to know if the XP-67 (McDonnell) was ever used in combat? Could you send me a three-view drawing of it?

James Howard, Mason City, Iowa

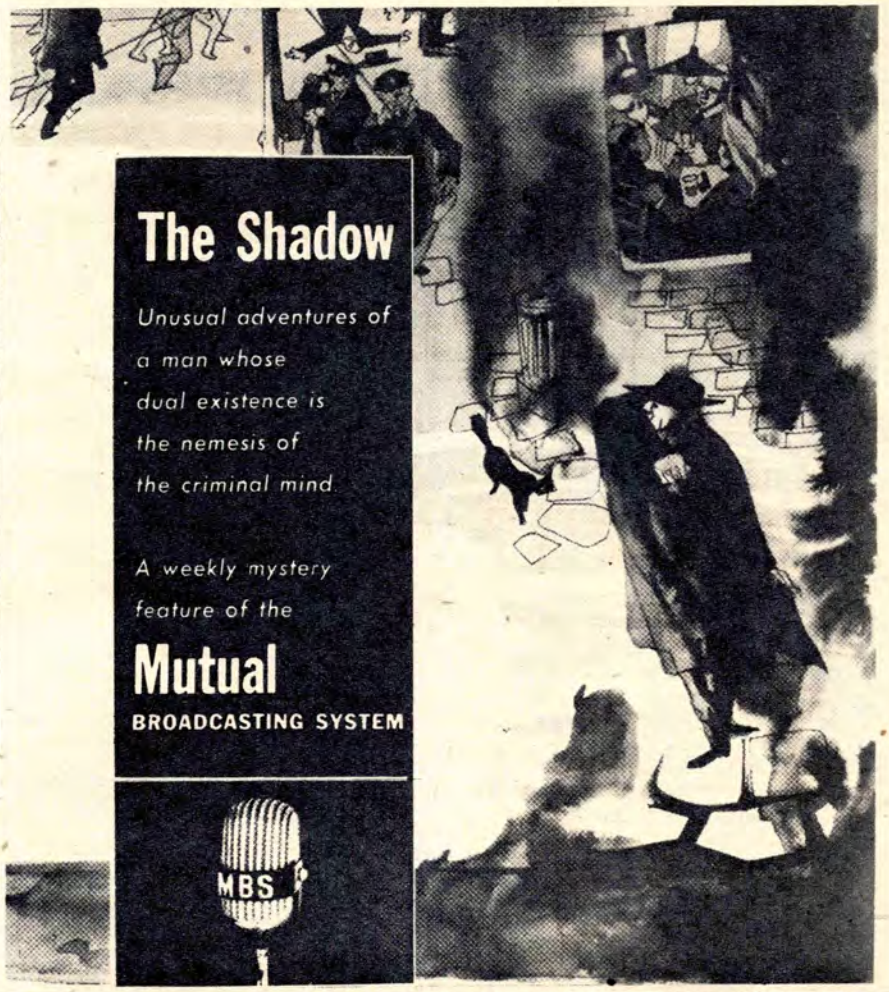
• The McDonnell XP-67 was never in service. Only one was built and we understand that it caught fire and burned. Sorry, we have no three-views of the plane.

Flying on One Engine . . . Could you please tell me if it is possible to run a double-engine plane on one engine, and if so, how can this be done?

Dick Sjoberg, Vista, Calif.

• The great majority of twin-engine air-

(*Continued on page* 15)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(*Continued from page* 8)

model flying is now the most popular hobby and one of the most popular outdoor activities. Conditions are very similar in Britain, so that the membership of the S.M.A.E. must represent only a fraction of Britain's model flying enthusiasts. In fact, 99% of S.M.A.E. members join through clubs and little has been done to encourage those outside the organized movement. Even within the clubs, most time and money has been spent on the competition-minded flyers, and fewer tangible benefits have accrued to those who wish merely to 'fly for fun'."

We quoted just a portion there. But it appears there is a remarkable parallel between the S.M.A.E. and our A.M.A. . . . or maybe it's the common question: what do I get for my buck?

If the British Society can get the "Sunday flyer" to join up and help support the movement—more power to 'em. That never worked over here. Oh, maybe now and then, but such memberships were always the exceptions.

And a Merry One to Them. Just gotta report we received a Happy New Year card from a contest! Yup, the Mirror Model Flying Fair. Found out specially printed cards were mailed to all donors of awards to the 53 MMFF. That pretty well set off 1953 for us: first an engraved invitation to attend a PAA-Load meet in Minneapolis, then a Christmas card from a competition.

Which recalls the front page cartoon of "Flypaper" last December. Drawn by Clarence Wells, it depicted Pop before the bedecked tree on Christmas Eve pausing in the wrapping of his gift to Junior, a free flight model called "Super Goon, the die-cut wonder." Stimulated by the message on the cover of the kit ("put it together in 2 hours"), Pop has the model darn near finished on the living room rug!

"Flypaper" is edited by Wells and published by Al Abrams, Jr. As we've said here before, it's by far the best paper of its type and an outstanding example of fine mimeographing. Of course, we don't always agree with everything that's printed therein and we feel certain that Flypaper doesn't like everything in Air Trails . . . not enough coverage of team racing, for instance.

We gotta take exception to one statement, though. Reviewing the latest Aeromodeleer Annual, Flypaper said, in part: "Nice photo of Franjo Kluz trophy. It is made of gold and silver filigree work, which is native Yugoslavian art, and took an entire year for one metalsmith to make. Quite a far cry from the mass produced stamped-out trophies we see so disgustingly often. International contests are taken seriously overseas, where trophies are awarded by royalty instead of businessmen promoting auto sales."

We say, old chaps—isn't that a bit thick? Those stamped-out trophies you mention are passed out by the thousands in hundreds of contests. And they're all yours. The F.K. beauty is a once-in-a-lifetime affair and you don't get to keep it even if you win it! It remains in the custody of your national model aero club.

As for who passes out awards—we'd prefer to get ours from the President of Plymouth than from the Dictator of Yugoslavia . . . anytime. Come on, boys, the Coronation's over . . . back to the office.

Dis and Dots. Man has a Japanese engine "exactly as large as a Fox .35" called a "Fuji." Full circle exhaust, lug mounts. What's its displacement? If you know drop a card to Gene Anderson, Gen. Del., Denver City, Texas. . . . "Old B-17 navigator" hit by nostalgia, longs for a glimpse of those gallant old bombers, wants to build model. Anybody know of a kit available, or even some decent plans? John E. London, 1972 Cole Drive, East Meadow, N.Y. would like to hear from you if you do. . . . British builder willing to swap plans, yarns and info on modeling. Hez anxious to get an AT plan with Still's Stuka stunt model and Atkins' B-26 Invader—must have some fascinating stuff to swap. D. J. Tanner, 17 Selmour Rd., Lee-on-Solent, Hants, England.

On that 8 hour, 31 minute. 30 second control line endurance flight by 15-year-old Sherman Holt, it now appears that about the whole city of Fayetteville, N.C. was involved. Sherman was assisted throughout the flight by J. W. Cronise, president of his club, the Circle Burners (real apt title, hey?). The flight was sponsored by the Exchange Club, Piedmont Airlines officials at Grannis Field where the record was set served as timekeepers and the city Fire Department had a generator truck on hand to provide light for the after-dark portion of the flight. The plane was airborne at 10:55 a.m. and remained aloft until 7:26. It was refueled every six to eight minutes. A plastic tube ran up the forty-foot control lines to the 1-pint fuel (*Continued on page* 58)

Carl McCain of Peru, Indiana, with modified Drifter Wakefield. Very consistent flyer, says Charles Borneman, Jr. Anybody here still remember Bert Pond's Peru Model Supplies?

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Good reasons why you should obtain your grand new Air Trails Model Annual right now! Complete directories of the U.S., Canadian and British aircraft and engine industries with addresses and listing of products! A directory of all American modelplane concerns and every kit they produce classified as to type, span, suggested power!

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Among the many helpful compilations in the '54 Model Annual: Popular Power Plants in exact half-size three-view form—26 motors from the Half-A's to the big C's. . . . Up-dated listing of Active American Model Aero Clubs with name and address of the contact man. . . . the National Model Aircraft Records . . . A.M.A. Rules in Quik-Chek Form by Leon Shulman.

Some of the well-known designers featured in Air Trails' new "M.A.": George Harris ("Sassy Saucer"); Earl Cayton ("The Slinger"); Cal Smith and Frank Lashek ("Convair XP-92A Jet"); Frank Ehling and Frank Zaic ("A-Pay"); Walt Musciano ("Republic P-27 B-D-N"); Dale Root ("Little Freak R/C"); Harold deBolt ("The Director's Eye-View of National R/C Meet").

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Big Photo Reviews: F.A.I. Power Championships. . . . Launch and Pray. . . . Nordic International Towline Glider Meet. . . . Here's to the Ladies! . . . The Mirror Meet. . . . Wakefield World Championships . . . Salute to America's No. 1 Modeler. . . . Also: A radio controlled "Swanee" river boat by Cap'n Frank Van Buren; Motor and Auxiliary Controls for R/C.

By no means least: Scores and scores of fine "hints and kinks" drawings by H. A. Thomas such as "Speed Aids," "Control Techniques," "Free Flight," "Shop and Tool Techniques," "Finishing," "Off Beat Models," "Structures," "Gliders," plus more, more, more. Also of special interest to the R/C fan—"R/C Sketches" and "Interference Monitor."

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AT-3 Veteran ☐ Non-veteran ☐

Western Roundup

FAI Free Flight Team Trials Kiwi-conscious

■ "The photo," (above), write Ray and Virginia Randall of Colma, Calif., "is in answer to your query about the type of models we build. It is a de Havilland 1-A one inch to the foot scale and built up stick-for-stick including all interior structure to the original. It is powered with a Cameron .19 hooked to a 5½" extension shaft. Engine is hidden in the radiator and has variable throttle control operated by electric motor in fuselage which operates butterfly valve in the intake. Batteries are carried in bag over shoulder and power passes through reversing switch in left hand to insulated control lines. A cam shaft operates the rocker arms and dummy valves. All controls work from cockpit with the bellcrank tied into the bottom of the control stick. Elevator and rudder controls run to pulleys outside propeller arc as per prototype and then back to empennage. Because of low power the tail must be brought up into flying position before model will take off, and throttle control permits easy scale landings."

With any means of measurement, the Thunderbugs FAI Free Flight Gas Team Contest at Vessels Ranch was a roaring success. True, there weren't a lot of teams, but for group cooperation and competition it was terrific. The meet was run strictly according to the rules, the models closely checked, flying by rounds and with true unassisted take-offs.

The models were varied, with Kiwis far outnumbering any other type of ship, unless one groups the originals—then they were the mostest, which to our way of thinking is indeed a healthy situation.

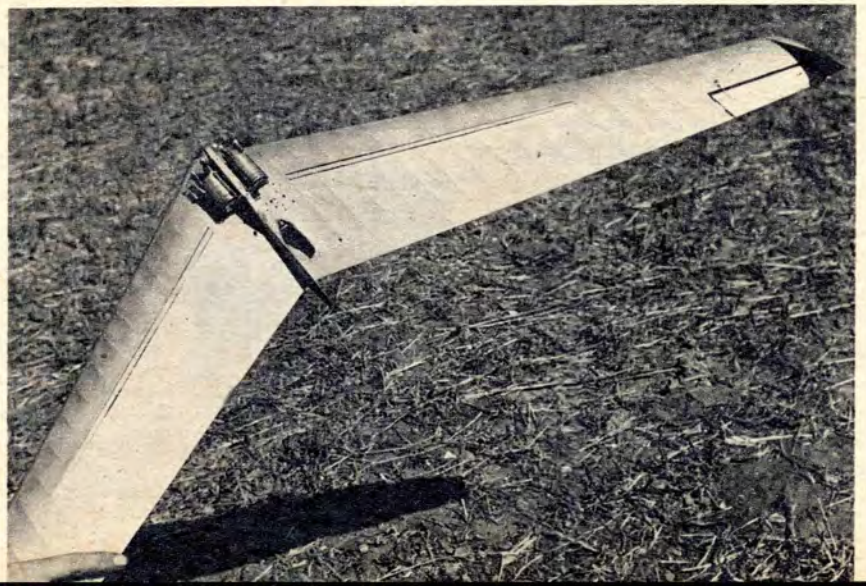
William Ellison and Fran Uyematsu used Cumulus wing and stabs with original fuses. Ed Kelley used a E.D. .246 Diesel with 9/5 Tornado but weighed in at 24 oz. Ed used a Spacer wing and stab. Ellison squared off the tips of his Cumulus wing and stab, then built a Racer fuselage. His ship was so new that it wasn't even color doped and due to this newness had trouble flying—you just gotta test 'em. Both Fran and Ed were just up to weight.

John Brodbeck Jr. and this Everett both flew Kiwis. Johnny finished 2nd and Dick 3rd. Brodbeck had very consistent flights, his first two being nearly four minutes on a 14 second engine run. Harry Gould had a Zipper wing and stab on an original fuse which flew at times, but due to its newness also suffered from the standpoint of inconsistency.

Sal Taibi had an entirely new ship, by far the best-looking ship he has ever built, doped with deep orange. The model was rather high aspect, undercambered wing, small stab, long slim fuse built rather light but skin-stressed for strength.

The contest was not lacking in enthusiasm and thrills, only seconds separating the Thunderbugs and Kiwis after the second round. Sal Taibi had become rather disgusted waiting for the 3rd round to begin, specially since he had company at home—so he went home. The first Thunderbug and Kiwi took off on the third round, both had good flights, the second Thunderbug kind (*Continued on page* 59)

Wayne Schindler's twin-Jetex 100 wing. Spans 40 inches, sweeps back 30 deg. Airfoil is 15% thick, 10% on top, 5% on bottom of double, no-camber section. Spoilers are fuse actuated.



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Now there are five of these popular models—including the new MiG—introduced last month. Build them all. Start a Superkit collection. You'll be proud of your beautiful models on their attractive display stands.

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If you didn't get your Superkit Mig when introduced last month, get one now. You'll like this model.

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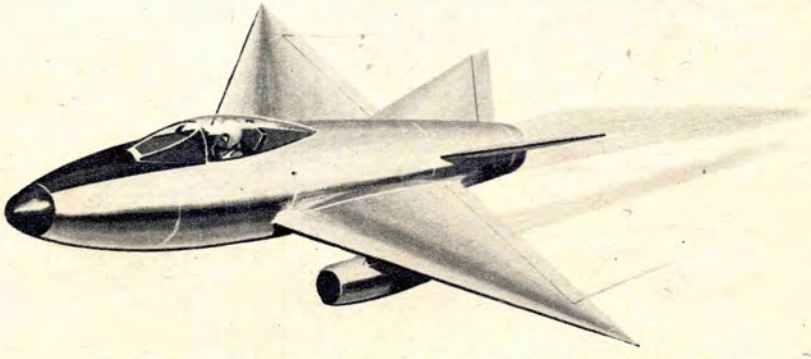
1ST AWARD
Experimental Attack Fighter

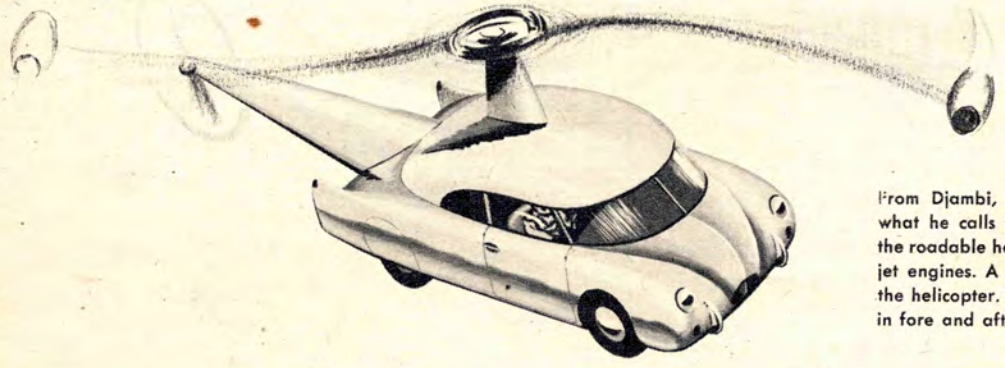
William Burrows of Forest Hills, N. Y., submits this experimental attack fighter armed with guided missile and four 20-mm cannon. Object of the aircraft is to penetrate deep into enemy territory and release the atomic missile 100 miles from target. The missile is controlled by the second crew member of the plane through radar. Top speed is 725 mph.

2ND AWARD
Ramjet Powered Interceptor

A Vee-tailed delta design by Bob Deadmond of Odin, Ill. The plane is powered by two ramjet engines on wingtips and a rocket motor in the fuselage. The rocket is used to bring the plane up to speed where the ramjets become effective. The Vee-tail creates less drag than the conventional one and makes ejection in event of emergency less dangerous as the ejected seat can clear the surfaces more easily than if the plane had a high vertical fin. Armament is four 20-mm cannon, span 28 ft. Top speed 800 mph, ceiling 60,000 ft.



3RD AWARD
Roadable Jet Helicopter



From Djambi, Indonesia, R. Gorter sends in the design for what he calls the All-American Aero-Car. The rotor vanes of the roadable helicopter are powered by two 260 lb. thrust pulse jet engines. A gas turbine powers the ground vehicle part of the helicopter. When operating as a car the blades are placed in fore and aft position. Gross weight of machine is 5000 lbs.

AIRMEN OF VISION DESIGN COMPETITION

Rules governing the "aircraft of the future" competition are as follows: Three-view sketches of the proposed aircraft will be required. These should be not less than 8½x11 inches for the entire three views. Give sketches of the complete airplane in three-quarter front and rear positions. Photos of a model of proposed design may be included. Information on the power plant(s), estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges. The design may be of any type: commercial aircraft, military planes (fighters, bombers, troop transports), planes for the private flyer and single-engine sporting or racing craft. The entry each month judged the most practical or of the greatest significance will receive an award of $25. Payment of $5 will go to runners-up. Entries will not be returned and for that reason those participating should keep copies of all material submitted. Mail entries to Airmen of Vision, c/o Air Trails, 304 E. 45th St., New York 17, N. Y. Editors regret that due to large number of entries they cannot enter into any correspondence on Airmen of Vision.

You Ask: "AT" Answers

(Continued from page 9)

planes can fly on single engine. The procedure is to feather propeller of the inoperative powerplant, increase the power on the good engine and trim the plane so that it will swing in the direction of the dead engine.

B-26 Same as A-26? . . . The problem is that I and a friend of mine are having an argument over the B-26 used in Korea. I say that the B-26 is the A-26 that was used in the last war, while he says that it is the A-20 of the last war. Is there any difference in the armament of the A-26 of W.W. II and the B-26 of now?

Ronald George Heberer, St. Louis, Mo.

● Douglas B-26 that was in Korea was formerly designated as A-26. The armament is essentially the same, some planes carrying eight caliber .50 machine guns in the nose, three .50s in each wing in addition to four guns in the two turrets.

Specs on X-Planes . . . I am a boy of 12 years of age, and I am very interested in airplanes. Would it be possible for me to obtain the following information: length, span, height, power plant, speed, ceiling, weight, range and armament of the Curtiss-Wright XF-87, the Martin XB-48 and the Convair XB-46.

Gary Cademartori, Union City, N. J.

● Curtiss XP-87: span 65 ft., four Westinghouse 24C jet engines.

Martin XB-48: span 108 ft. 4 in., height 27 ft. 6 in., top speed 480 mph, wt. 58,500 lbs. empty. Tactical radius 800 miles. Armament (proposed) four remote-controlled guns in tail.

Convair XB-46: span 113 ft., height 28 ft., speed over 500 mph, wt. 91,000 lbs. fully loaded. Engines, four Allison J-35s of 3500 lbs. thrust each.

Armament of W.W. II Planes . . . I would like to know about the armament on the B-29, and the Flying Tank in Sept. 1951 issue. Is it a hi-flyer fighter plane or not? How many guns does the B-17 carry? Also the armament on the Focke-Wulf and the Helldiver, and the P-47. Which was the best dive bomber, the Kingfisher or the Hellcat?

Gary Osburn, Yates Center, Kans.

● The B-29 has two remote controlled gun turrets on top of fuselage and two on the bottom; each has two .50 caliber machine guns. Two 20 mm cannon in the tail. The tank version is not armed. The B-17 had thirteen .50 caliber machine guns. The B-29 and the B-17 are bombers, not fighters.

The Republic P-47 Thunderbolt had eight .50 caliber machine guns in the wings.

The Curtiss SB2C Helldiver had two 20 mm cannon and four .50 caliber machine guns in wings, also one .50 caliber machine gun in rear cockpit. The Focke-Wulf Fw-190 was variously armed; some had four .50 caliber machine guns, others two 20 mm cannon.

Neither the Vought Kingfisher nor the Grumman Hellcat were dive bombers. The Kingfisher was a scout-observation plane based on cruisers and battleships, the Hellcat was a fighter.

History of B-26 Invader . . . It would be appreciated if you would forward any available information on the F-76 (P-76) aircraft to me. It would also be appreciated if you could inform me as to where historical information on the Douglas B-26 "Invader" aircraft can be obtained.

Robert J. Sward, Bountiful, Utah.

(Continued on page 79)

"B-W-O-I-A-N-G!"

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Southern Scene

"Southeastern" Contest scheduled for 3 days next June; "Southwestern" gang challenges

■ Plans for the Greater Southeastern Championships are well underway. Robert S. Davis has agreed to become the Executive Director. Getting a sponsor who will take over the money raising is the difference between a Great Southeastern this year, or an abbreviated class of contest.

Lt. Commander Ed Goshorn made contact with Jack Rogers, Chairman of the Junior Chamber of Commerce Aviation Committee, looking toward that body taking over sponsorship. They represent the combined interests of commercial, Armed Forces, and private aviation. Decision was reached to make this year's Southeasterns a three-day meet instead of two. If all plans come through, you can look forward to a great meet next June—second or third week-end, on a Friday, Saturday, and Sunday! We'll have more news of developments next month.

Speaking of early planning, why not begin *your* plans *now* for your contest this summer? In view of our experiences, here are some suggestions that may help. (1) Call your group into a meeting now. (2) Set dates, and elect an Executive Director. (3) Make a listing of prospective sponsors. (4) See if you can get together the Armed Forces, commercial and private flying interests and call representatives into a meeting. At such a meeting you'll have the key men interested in aviation and the beginning of your sponsor group. Present them with good facts. Aviation begins with the modelers. Boys who can do something constructive with their hands are the potential good citizens of tomorrow. Stress the vocational values. Modeling leads into industry, into higher ranks in the Armed Forces or a foundation for aeronautical engineering in college.

From such a group as we have suggested, you can break down in committees who will be responsible for finance, publicity, equipment, awards, grounds, and events. Submit a planned budget based on the number of events in your meet. We contend that in many places the leaders work backwards. They find out how much money they can raise, then fit the events into the money they get. Try it this way—get a good organization, set a budget and number of events, *then* raise the money! Most necessary is advance planning to get men behind your movement who can pick up a phone and call Bill Jones and bluntly say, "Bill, I want a hundred dollars!"

Sometimes we think it's harder to judge those scale models than make 'em. Don Williamson (lt.), Carl Friend and the now famous B-17 control line model entered in SE-erns by Bryan Thompson.

From Korea comes a letter from John A. Simms. John says it's sure hard to get model materials there. We asked him to air mail us a story on "modeling in Korea."

Frank Huffman of Fort Worth, former VP of District 8, wrote before elections. Of course you know he was a candidate for the AMA presidency. Frank challenges the Southeasterns, saying good naturedly, "Us fellows in District 8 are going to make our Southwesterns bigger and better than your Southeasterns!" Frank, I'm passing this challenge over to Bob Davis, Commander Goshorn, and whoever sponsors our meet! You've got some fine flyers out your way, but don't forget that Georgia won more National titles last year (*Continued on page* 68)

Come on, Hal—tell the "Big Boys" how you do it!

Hal Roth of Richmond, Calif.

Hal won a record-smashing first place in the model Clipper* Cargo PAA Load Event at the '53 NATS. His 6-oz. model carried 23¼ ounces of payload—a ratio of weight empty to payload which never has been approached by the "Big Boys" in full-scale aviation!

PAA LOAD EVENTS

You're reading about the hottest activity in competitive aviation modeling!

Sponsored first by Pan American in 1948, these weight-carrying events for free-flight gas models have caught on like wildfire. This year they will spark many local and regional meets—and the spotlight will be on PAA Load Events at the NATS.

In designing your entries, remember that the purpose of the event is to encourage the building and flying of model aircraft which resemble full-scale airplanes with respect to *carrying a payload safely through the air.* After all, isn't this the basic purpose of commercial aviation itself?

Start on your PAA Loader now. For rules and specifications for 1954, write to: Educational Director, Pan American World Airways, 28-19 Bridge Plaza North, Long Island City 1, New York.

*Trade-mark, Reg. U. S. Pat. Off.

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Pre-flight training

Your first stop is Lackland Air Force Base, Texas, where you receive three months of intensive officer training. You'll be plenty busy, especially for the first few weeks, but there'll be some time for recreation, with swimming pools, handball courts, movies and other diversions right on the base.

Primary training

In Primary, you get your first taste of flight. Your flight training is planned in safe, easy stages. You start in a light civilian type "Piper Cub" of approximately 100 horsepower. From there, you go to the 600 horsepower T-6 Texan, your first heavy plane. You'll practice take-offs and landings, basic air work, and instrument flying. On the ground you'll learn navigation, flight planning and other aerial subjects.

Basic training

In Basic, you fly the fast maneuverable T-28, and later, if you are a bomber pilot, the large "Mitchell B-25". If you're slated for jet flying, you'll take your first lessons in a ground jet instrument trainer that simulates the conditions of flight. Then you'll go up with an instructor in the real thing . . . the two seated T-33. Before you know it you'll be flying alone, doing acrobatics and intricate formation flying.

Winning your wings and commission

When you graduate from Basic, you receive your wings and commission as an Air Force 2nd Lieutenant, and start earning over $5,000 a year. As a student officer, you'll then be sent to highly specialized advanced courses.

Advanced training

In advanced training, you fly the fastest, latest planes in the air. These include the F-84-F "Thunder Jet", the F-89 "Scorpion", the F-94 "Starfire", the B-29, and the B-47 "Stratojet". As a skilled pilot, you'll have confidence in yourself, your plane and your future.

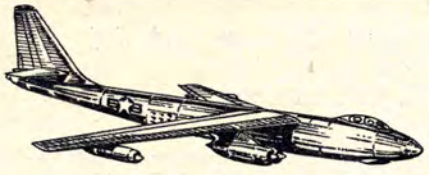
Facing the future

After completing the Aviation Cadet Program, you'll be given an indefinite appointment in the Air Force Reserve and called to active duty for a period of three years. From there, your future is set. Your silver wings will open the doors to the best jobs in aviation. You're on your way!

WHERE TO GET MORE DETAILS:

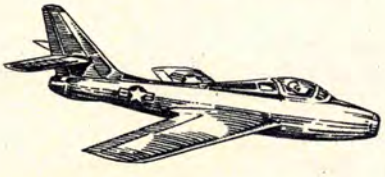
Contact your nearest Air Force Base, Aviation Cadet Selection Team, or Air Force Recruiting Officer . . . Or write to: Aviation Cadet, Headquarters, U. S. Air Force, Washington 25, D.C.

THESE ARE THE PLANES YOU FLY



B-47

T-33



F-84-F

B-25

B-29

T-28

T-6

PIPER CUB

U. S. AIR FORCE

Air Trails

You know it's not our usual practice to start one issue off talking about the next one . . . but we've got such big news it just won't keep! Beginning with the April issue you'll find the best in air progress and aeromodeling *plus* additional exciting hobbies for young men. A bigger Air Trails will bring all this to you . . . *more* pages will be added and a new paper will give even better reproduction of our famous illustrations, photographs and cutaway drawings. The new Air Trails *Plus* will cover model planes, cars and boats, plus radio control, mechanics, contests, science and allied subjects. And we'll also be advising you of scholarship opportunities, technical training possibilities and job forecasts!

The success of our Airmen of Vision competition has enabled us to offer more valuable awards there and in other fields, too. Lots of prizes for hobby photos and reader participation features.

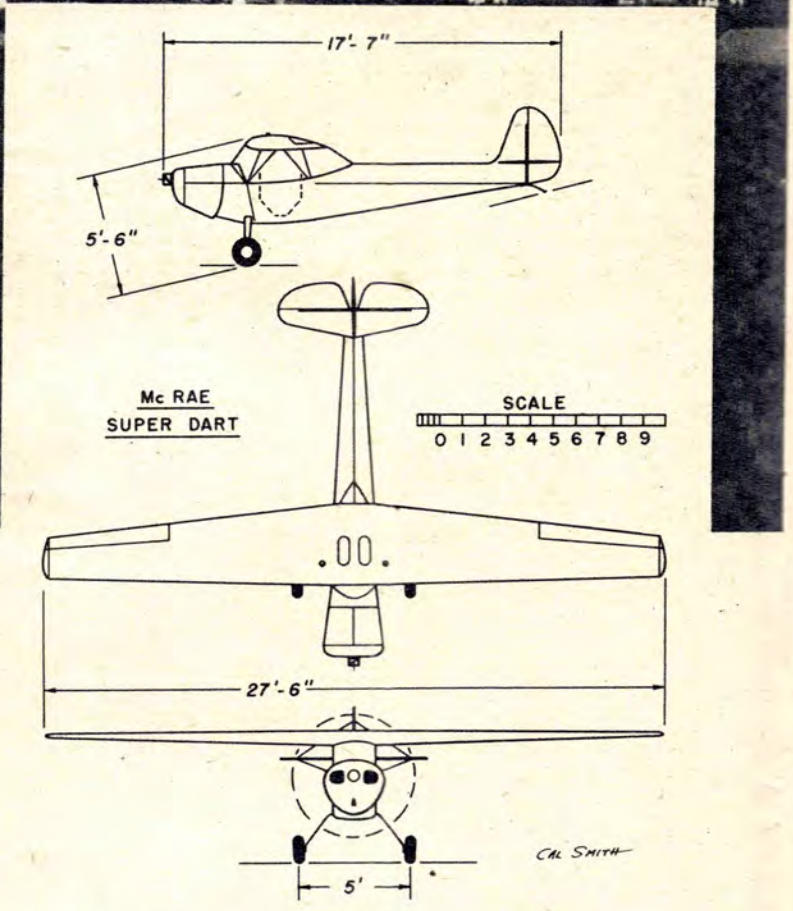
So for the best in air-modeling and other absorbing hobby-sports see the April issue . . . on sale March 10 . . .

AIR TRAILS

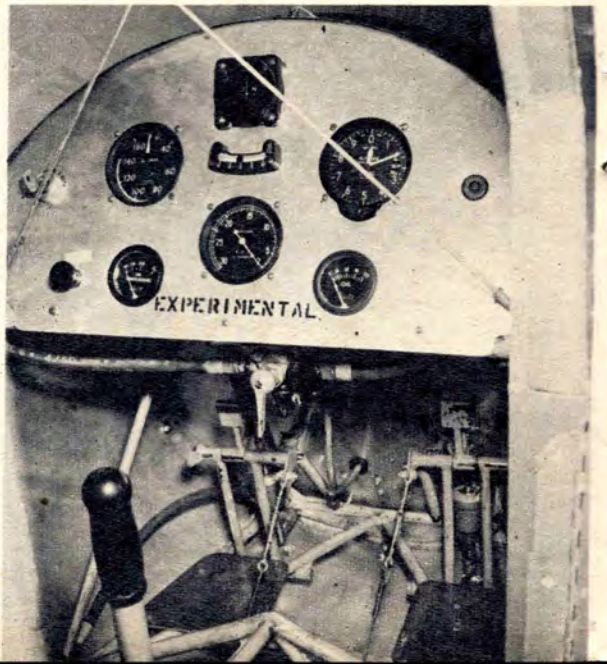
HOBBIES

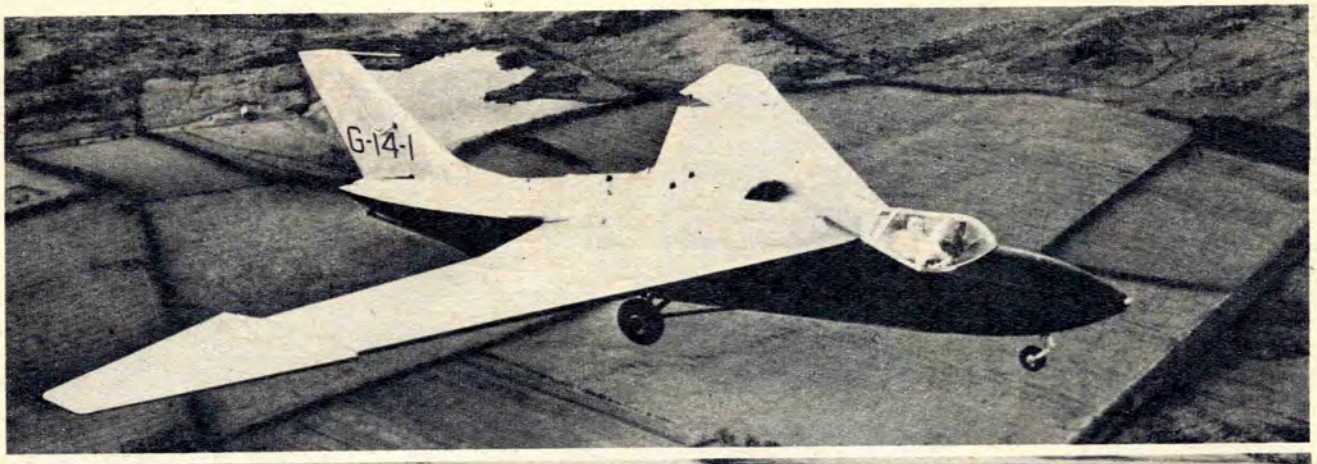
FOR YOUNG MEN

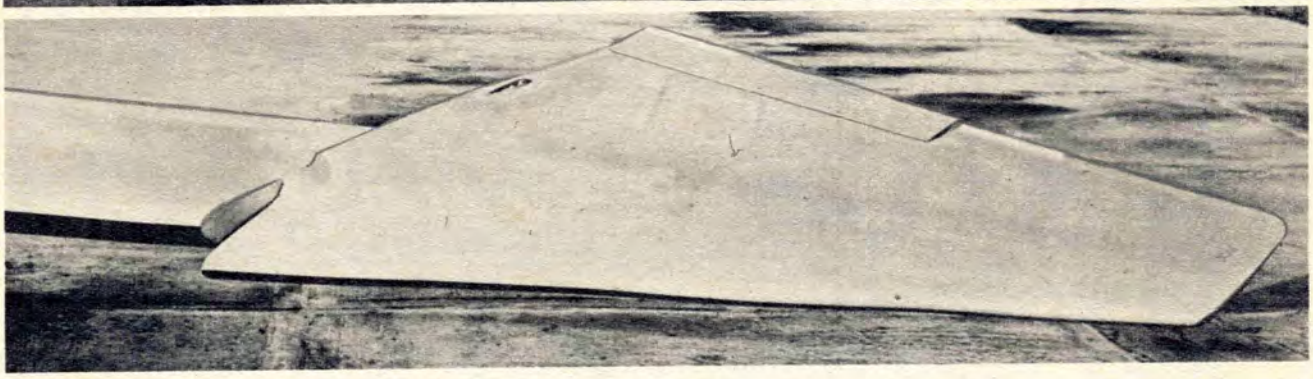
WORLD-A-WING



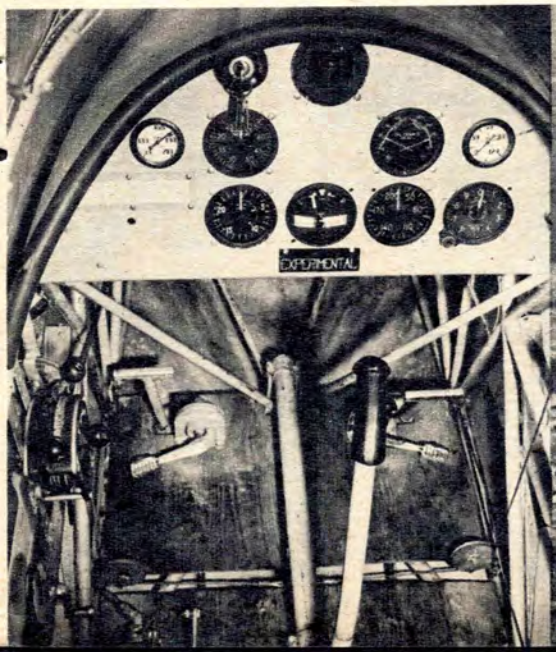
McRae Super Dart, one of the neatest home-built airplanes, is the work of Jack McRae, a stress analyst with Grumman Aircraft Engineering Corp. Basic shape and some of the structure are those of a 20-year-old Driggs Dart. Fuselage is of metal tubing, fabric covered; the high aspect ratio cantilever wing is all-wood, with plywood skin and solid balsa ailerons. The landing gear was especially made for McRae by Cessna. The single-place Super Dart is powered by a 55 hp Lycoming engine turning a Flottorp propeller. Wing area of the airplane is 76 sq. ft., gross weight 750 lbs., giving it a wing loading of slightly under 10 lbs. per sq. ft. Clean design and efficient wing are responsible for its high top speed of 125 mph, landing speed 50 mph. Fuel is carried in two 5-gallon tanks. Range is 300 miles. The cockpit of the Super Dart (see photo on the right) is simple compared to many a present-day aircraft, but contains all necessary flight and engine instruments. It took McRae five years to finish the little home-built, but the results were highly satisfactory. The plane, kept at the Deer Park Airport on Long Island, is used by him for pleasure flying along with his Cessna 140.

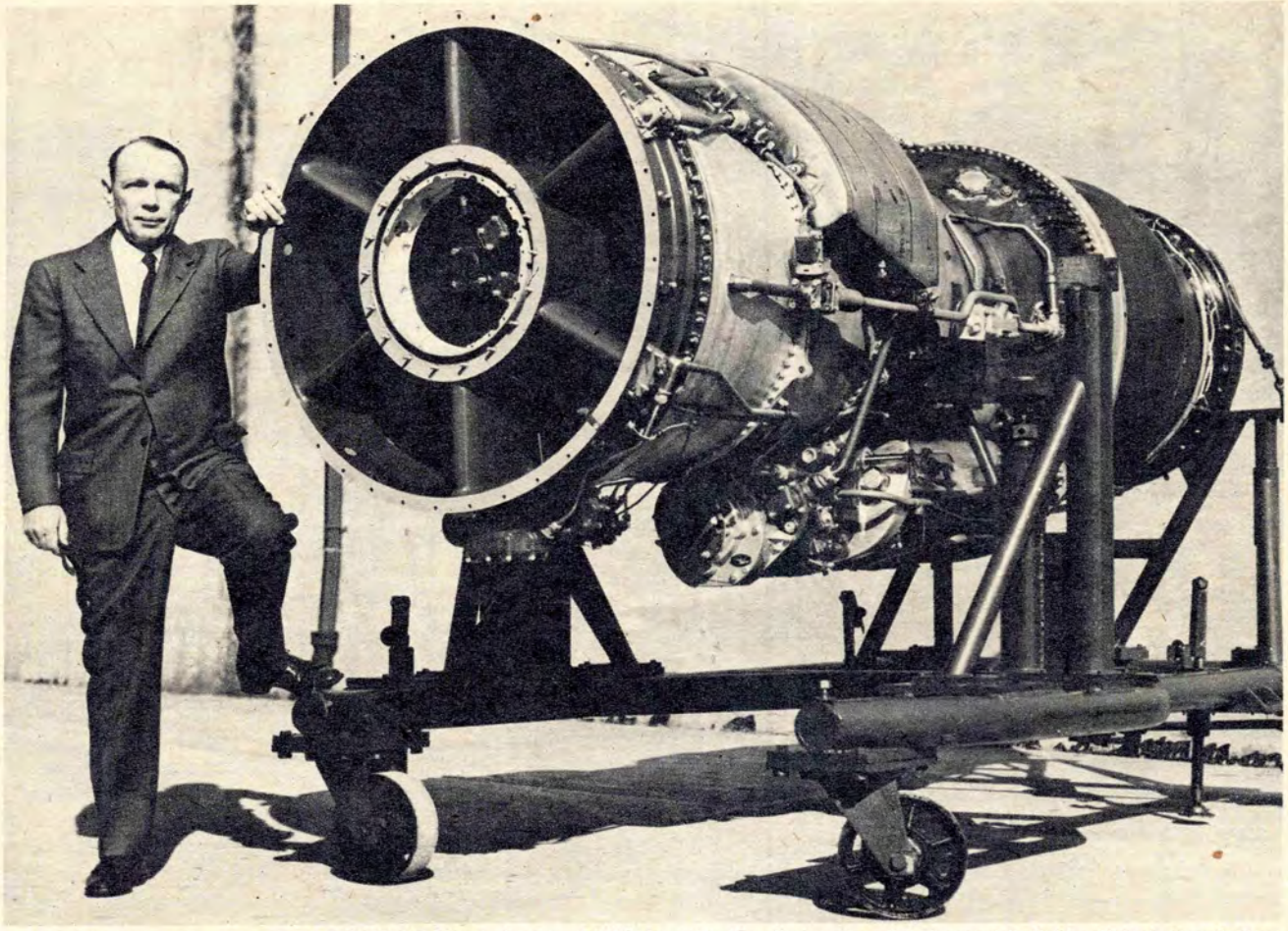




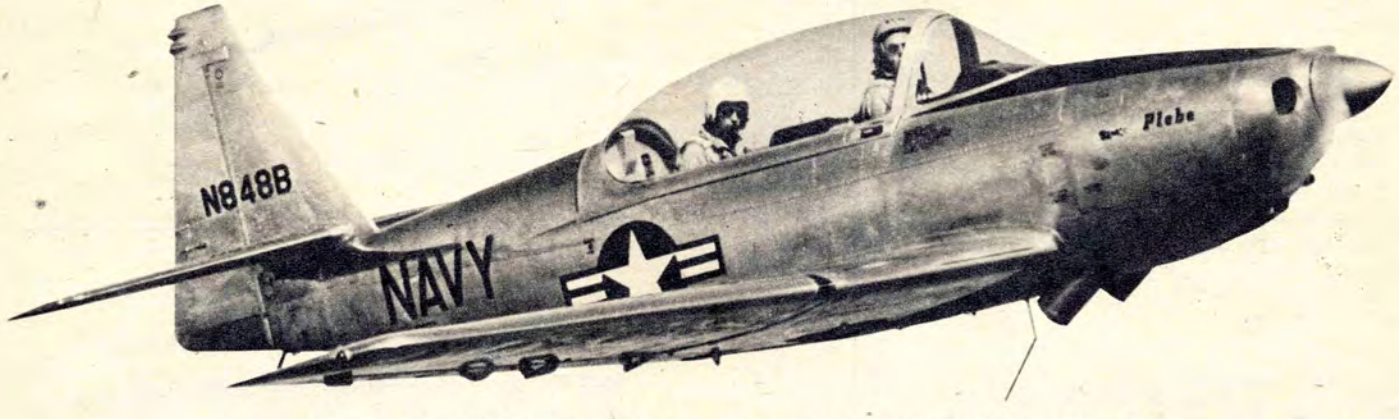


Above: British Short Sherpa, aero-isoclinic wing experimental airplane in flight. Photo directly below shows the rotating wingtips which serve both as elevators and ailerons. This revolutionary control maintains constant angle of wing incidence regardless of flexing and greatly improves maneuverability of high-speed aircraft at high altitudes. *Right:* Brantly B-2 light all-metal two-place helicopter, a newcomer in rotary wing craft field. Rotor blades have two flapping hinges each; 135 hp Lycoming engine features induction cooling instead of fan. Seats two side-by-side. *Below:* Another home-built, also from Deer Park Airport, L. I., the Nelson N-4. This one owes its existence to the Piper Cub from which it was constructed by owner-builder Ray Nelson who made it as his practical exam for the CAA Aircraft & Engine mechanic's license. Powered by an 85 hp Continental engine with twin stacks from Temco Swift. Wheels are from Ercoupe. Wingspan is 24 ft. 9 in., length 23 ft. 6 in. Gross wt. 1200 lbs. 118 mph tops. Instruments include bank & turn indicator, cylinder temperature gauge.

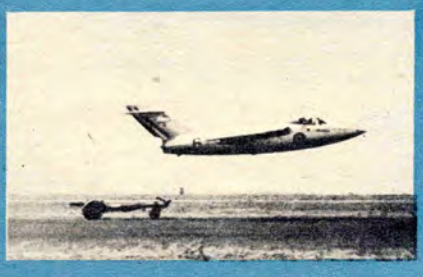




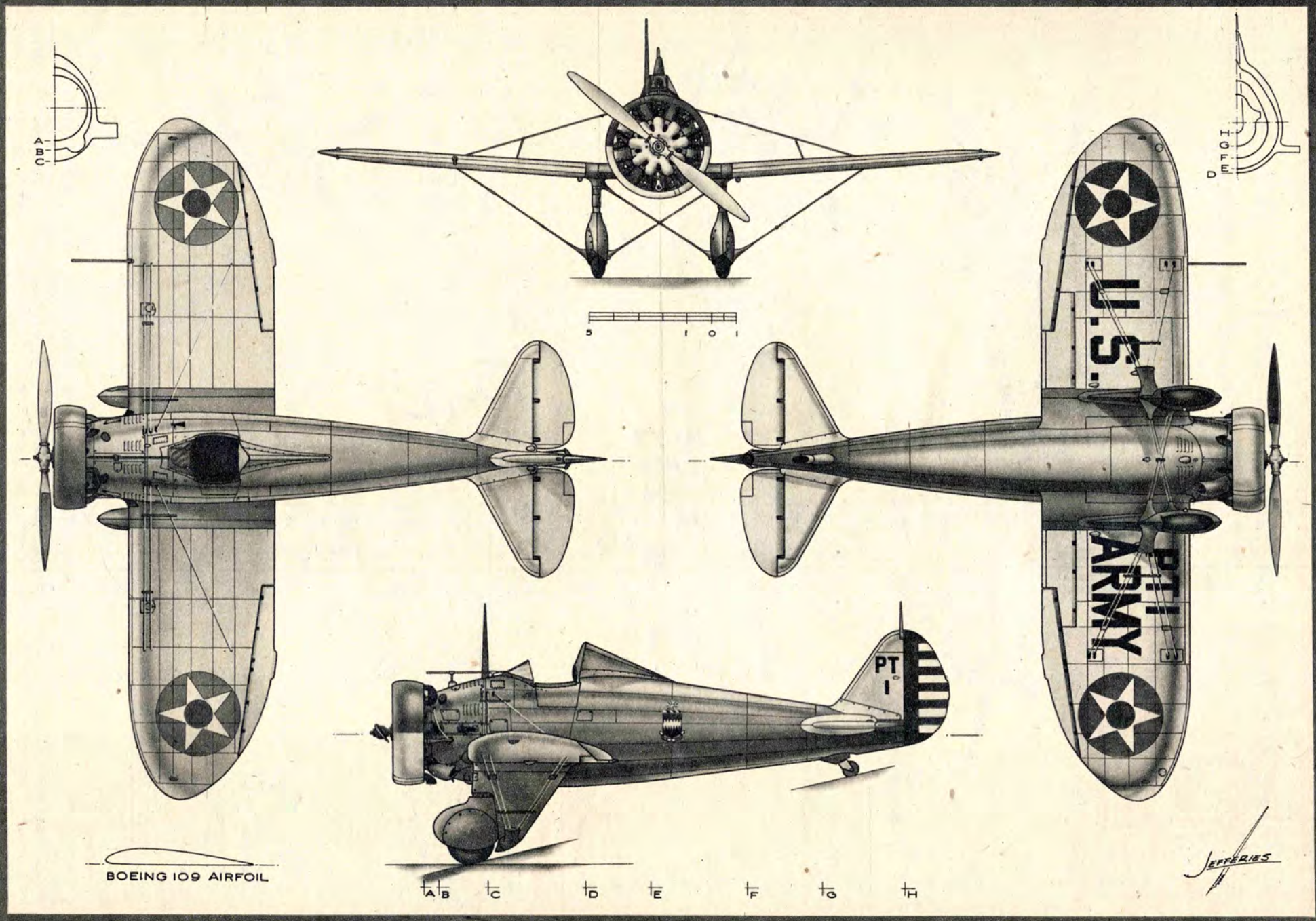
America's first jet engine to be rated at 10,000 lbs. thrust, the Pratt & Whitney J-57. Standing next to it is Leonard S. Hobbs, United Aircraft Corp. vice-pres. in charge of engineering who was awarded Collier Trophy for masterminding the engine. Powers the B-52, F-100, F-102, F4D and A3D.



Temco Plebe, primary and basic trainer designed and built by Temco Aircraft Corp. for U.S. Navy. Now undergoing tests in Pensacola, Fla., with three other trainers to determine which will replace SNJ. 225 hp Continental, 171 mph tops.



French ground support jet fighter, Sud-Est Baroudeur. Can operate from unprepared fields 750 yards long. Takes off from a rocket-propelled dolly, lands on reinforced belly skid. Can be placed on dolly in two minutes by means of winch-equipped jeep. Span is 32 ft. 10 in. Wing sweep is 38 deg.



BOEING P-26A

Scale: 3/16 inch equals 1 foot. Markings and insignia are those of Lt. Col. Ross Hoyt, 20th Pursuit Group

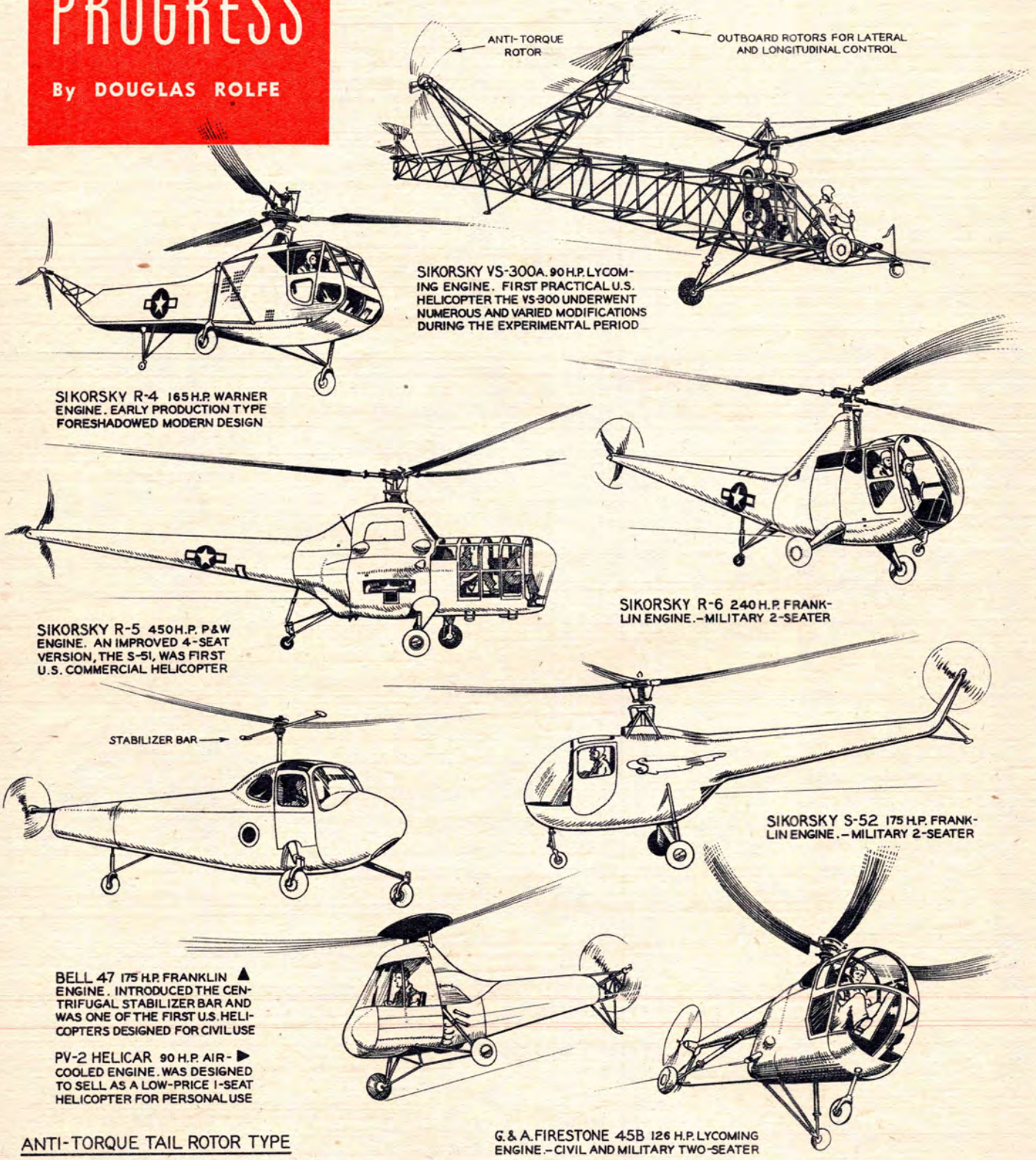
Drawn by W. M. JEFFERIES, JR.

AIR PROGRESS

American Helicopter Revue

PART II—THE FIRST DECADE

By DOUGLAS ROLFE



SIKORSKY VS-300A. 90 H.P. LYCOMING ENGINE. FIRST PRACTICAL U.S. HELICOPTER THE VS-300 UNDERWENT NUMEROUS AND VARIED MODIFICATIONS DURING THE EXPERIMENTAL PERIOD

SIKORSKY R-4 165 H.P. WARNER ENGINE. EARLY PRODUCTION TYPE FORESHADOWED MODERN DESIGN

SIKORSKY R-5 450 H.P. P&W ENGINE. AN IMPROVED 4-SEAT VERSION, THE S-51, WAS FIRST U.S. COMMERCIAL HELICOPTER

SIKORSKY R-6 240 H.P. FRANKLIN ENGINE.—MILITARY 2-SEATER

SIKORSKY S-52 175 H.P. FRANKLIN ENGINE.—MILITARY 2-SEATER

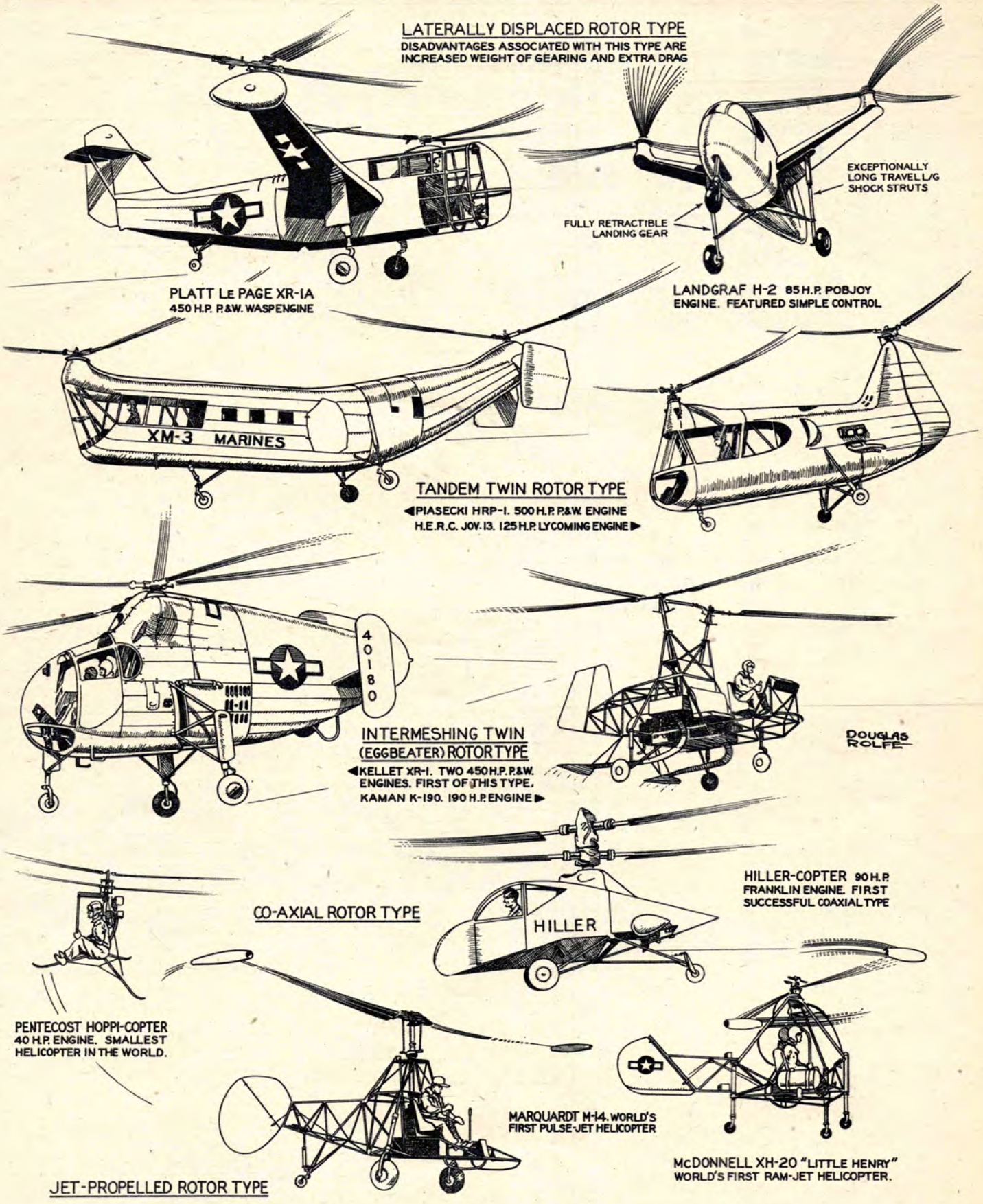
BELL 47 175 H.P. FRANKLIN ENGINE. INTRODUCED THE CENTRIFUGAL STABILIZER BAR AND WAS ONE OF THE FIRST U.S. HELICOPTERS DESIGNED FOR CIVIL USE

PV-2 HELICAR 90 H.P. AIR-COOLED ENGINE. WAS DESIGNED TO SELL AS A LOW-PRICE 1-SEAT HELICOPTER FOR PERSONAL USE

G. & A. FIRESTONE 45B 126 H.P. LYCOMING ENGINE.—CIVIL AND MILITARY TWO-SEATER

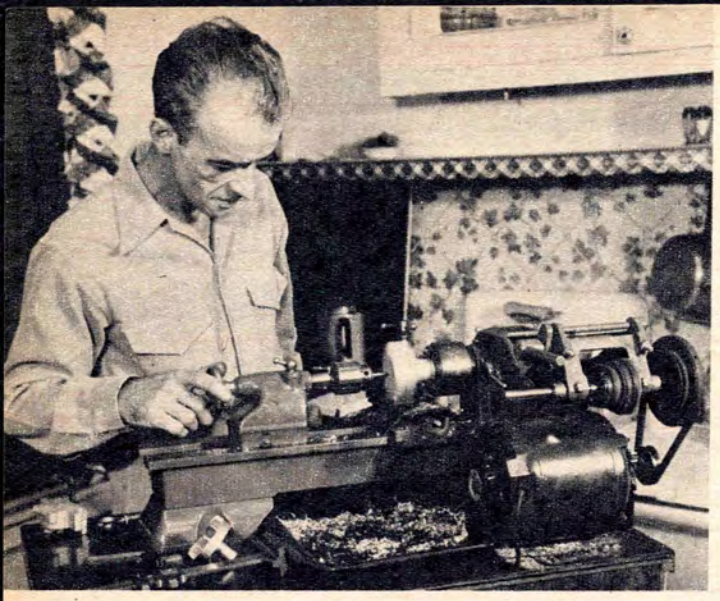
ANTI-TORQUE TAIL ROTOR TYPE

Although many people are under the impression that Igor Sikorsky invented the helicopter, this is not the case. What is true is that his model VS-300 was the first practical and truly successful helicopter, and all subsequent development of this form of flight may be said to stem from it. Still in its infancy when compared with normal airplane development, the helicopter has made spectacular strides since the day Sikorsky took his clumsy-looking craft up and demonstrated for the first time the ability to take off and descend vertically; to hover indefinitely and to fly forwards, backwards and sideways with the machine at all times under complete control. See February issue for details.


LATERALLY DISPLACED ROTOR TYPE
DISADVANTAGES ASSOCIATED WITH THIS TYPE ARE INCREASED WEIGHT OF GEARING AND EXTRA DRAG
EXCEPTIONALLY LONG TRAVEL L/G SHOCK STRUTS
FULLY RETRACTIBLE LANDING GEAR
PLATT LE PAGE XR-1A
450 H.P. P.&W. WASP ENGINE
LANDGRAF H-2 85 H.P. POBJOY ENGINE. FEATURED SIMPLE CONTROL
XM-3 MARINES
TANDEM TWIN ROTOR TYPE
◀PIASECKI HRP-1. 500 H.P. P.&W. ENGINE
H.E.R.C. JOV-13. 125 H.P. LYCOMING ENGINE▶
40180
INTERMESHING TWIN (EGGBEATER) ROTOR TYPE
◀KELLET XR-1. TWO 450 H.P. P.&W. ENGINES. FIRST OF THIS TYPE.
KAMAN K-190. 190 H.P. ENGINE▶
DOUGLAS ROLFE
HILLER-COPTER 90 H.P. FRANKLIN ENGINE. FIRST SUCCESSFUL COAXIAL TYPE
CO-AXIAL ROTOR TYPE
HILLER
PENTECOST HOPPI-COPTER
40 H.P. ENGINE. SMALLEST HELICOPTER IN THE WORLD.
MARQUARDT M-14. WORLD'S FIRST PULSE-JET HELICOPTER
McDONNELL XH-20 "LITTLE HENRY" WORLD'S FIRST RAM-JET HELICOPTER.
JET-PROPELLED ROTOR TYPE

Nor must it be forgotten that the development of the helicopter is due in large measure to the pioneering efforts of Cierva and others who in developing the autogiro, first successful rotary wing airplane, discovered the principle of the articulated rotor blade and methods for its control.

On these pages are displayed examples of the basic types of helicopters introduced during the first decade of helicopter flight. They form an interesting study in the various approaches to the problem by different designers with their own ideas on configuration and methods of control. The anti-torque tail rotor type occupies the entire left-hand page, while the right-hand page is devoted to various other designs.



Howard (left) works in his kitchen; uses 6 in. Atlas lathe

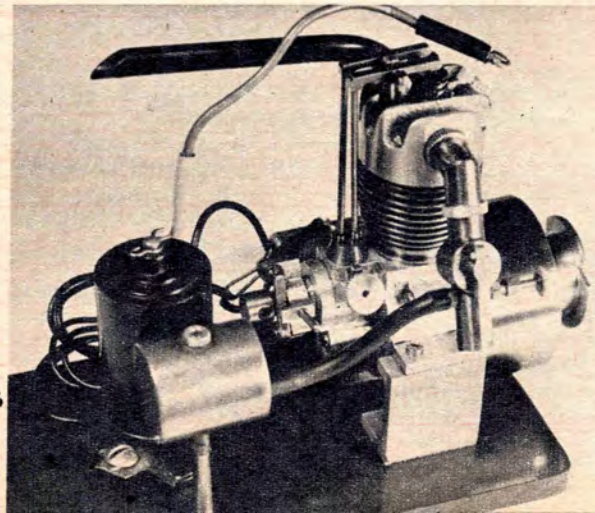
HOME-MADE Engine King

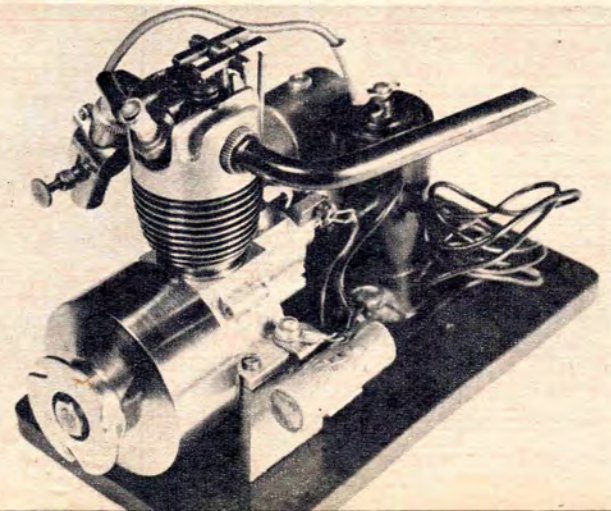
Master mechanic, model speedboat record holder and an outstanding designer of miniature powerplants: Howard Manderville

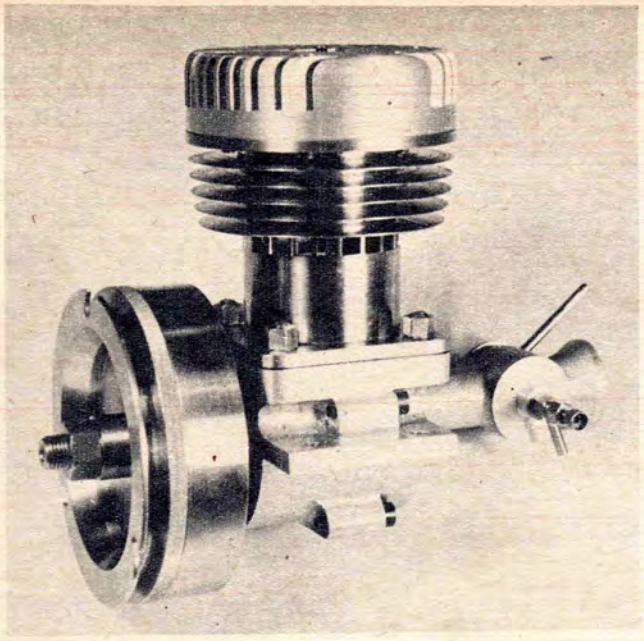
Photos by John Schneider
Data by Aubrey Kochman

Mr. Manderville held world's record for Class C model boats at 62.5 mph; unofficially he has been timed at 74.80!

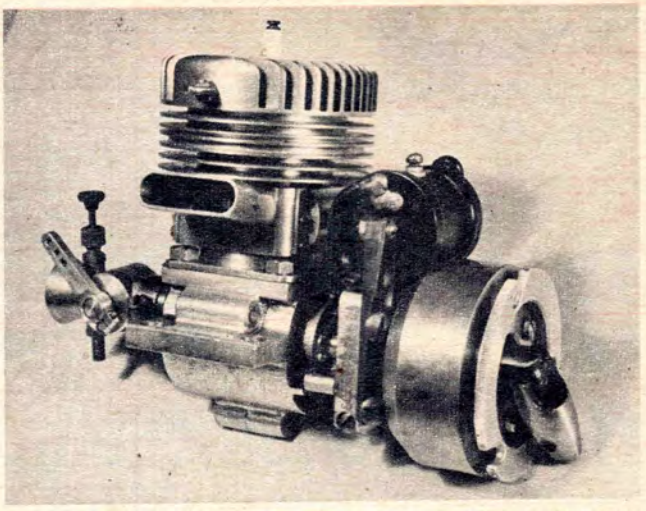
Four-cycle overhead valve engine like this requires about 80 hours to make. Bore is .600 in.; stroke, .562 in. Idles at 350 rpm; wide open, 9,000. Weighs 3 oz. less flywheel. Runs 8 min. on one-half oz. of straight gas. It can take air prop.



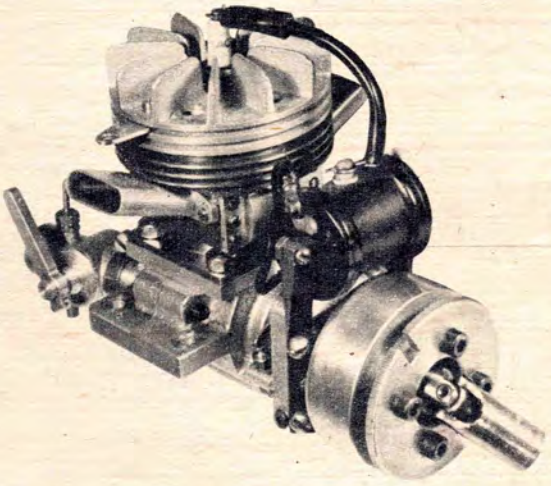




Latest "mill" from the Manderville kitchen is barrel throttle, glow plug 30 cc for Class B boat racing. 360 deg. porting; 1.5 in. bore; 1 in. stroke; rotary valve; delivers 2.75 hp at 15,000; it weighs in at 3 lbs., 2 oz. less flywheel.

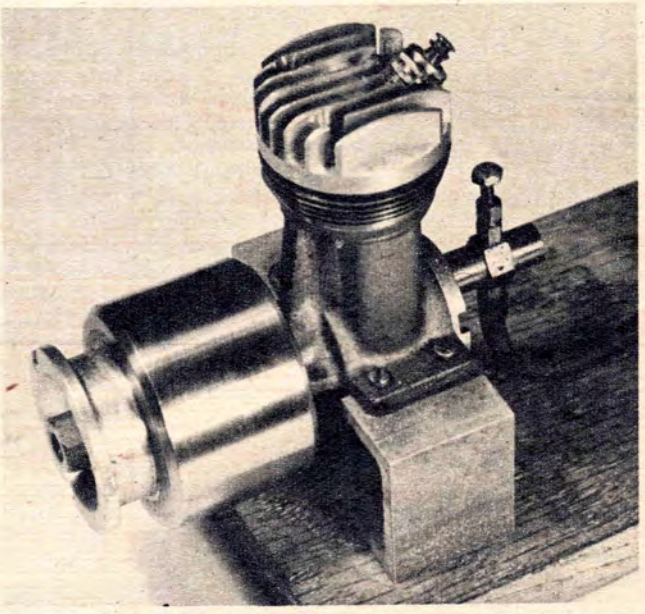


Equipped with a Hornet magneto, .99 cu. in. two-cycle rotary valver does 28,000 rpm. Ball-bearing crankshaft, lower end of con rod has roller bearing. Bore, 1.225 in.; stroke, .750 inch. Weight with flywheel and magneto is just 14 oz.



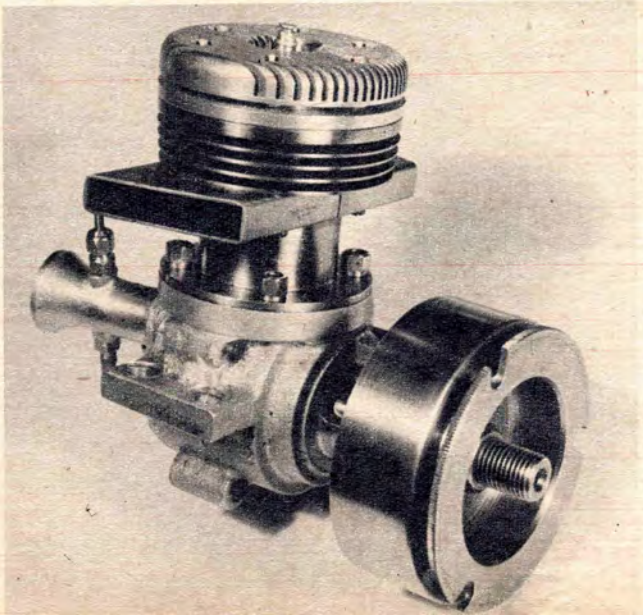
Another Manderville 15 cc engine which powered 30 inch hydroplane at 75 mph. Much the same as above, right, except slightly smaller and has cast head. Engine of this size requires about 45 hours. H.M. has turned out 350 motors.

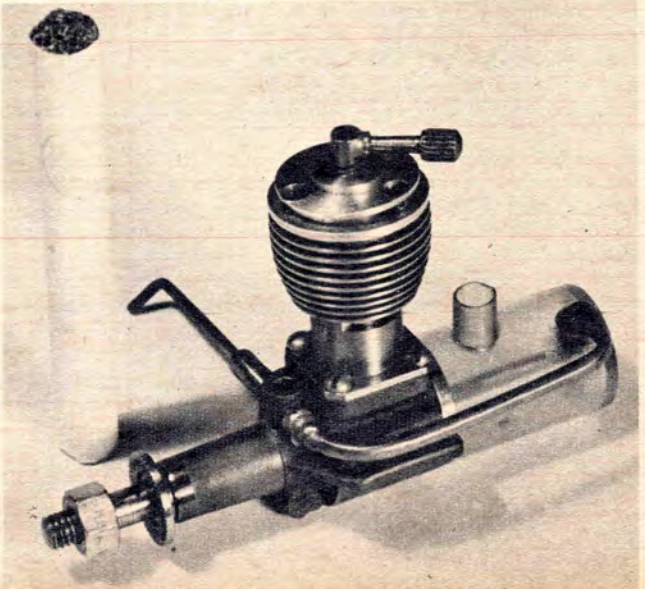
Two-cycle rotary valve with 360 deg. porting, .60 cu. in. Glow plug, does 18,000, can use prop instead. Manderville is a member of the Model Knights Club of NYC; its marine division has 10 active, serious model speed boat members.



Glow plug, rotary valve .099 job with roller bearing crankshaft. Plug is offset. Turns 17,500 rpm; with 5 oz. flywheel weighs 7 oz. Howard has tried oxygen supercharging, run engines on propane and even with illuminating gas as fuel.

This is a diesel with variable compression. Weighs 1½ oz. without prop, with Lucite tank. Turns 10/4 prop 7,200. Bore and stroke each 10 mm. That's regular-size cigarette! Smallest engine Howard made had ¼ in. bore and stroke!





High-Q

The National Championship R/C Winner

What's needed in a model to win? One chap who knows: the Champ himself

By JACK C. PORT

■ *High Q* is not a completely new design, but rather my latest attempt to incorporate desirable features that would produce a better model for radio control contest work. Actually, the design is based on experience gained by flying other ships at contests and taking note of the scoring deficiencies present. Probably the most important factor in the design of a radio model is the type of basic control to be used. Because of past experience in flying and adjusting the basic escapement rudder control configuration, the design here was centered around the improvement in performance of this simple but effective method of control.

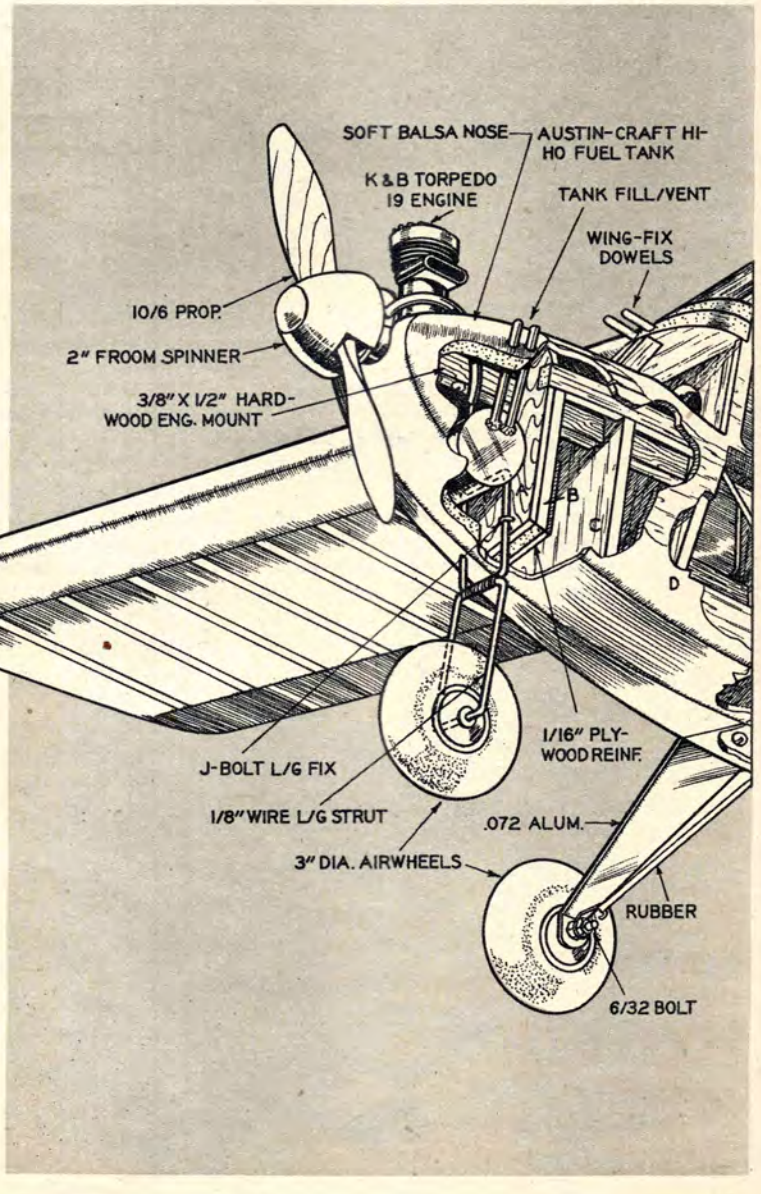
If we analyze the AMA radio control flight rules, combined with general contest conditions, certain ideas for development are evident. First, the model must be fully stuntable, yet adaptable to the type of weather conditions encountered.

As I have noted in the past, a lot of good models were at fault in the wind. Usually because of light wing loading and inadequate power, the model, although capable of the stunt pattern, was prone to be lost downwind due to the lack of penetration. Actually penetration is the property of high airspeed combined with good longitudinal stability and the degree of its use is primarily controlled by power and wing loading factors.

If we attempt to increase the penetration factor in any given model of light wing loading (12 to 14 oz./square ft.), we must increase power, move C.G. aft, and reduce angular difference between wing and stabilizer. Usually before the desired airspeed is reached, a condition of longitudinal instability appears. Sometimes the model will tend to "tuck-under," especially if airspeed is increased more by a spiral dive in an attempt to begin a maneuver. This is basically a result of flying the wing at too low an angle of attack, which causes the center of pressure to move aft, creating a nose-down tendency. Also, due sometimes to poor wing structure, the increased airspeed will cause a certain flexing that lessens even more the angular attack, thereby exaggerating the tuck-under condition in model.

Although the tuck-under condition may not be to the point of complete danger, with respect to crashing the airplane, it will minimize the property of stunting the model. A nose-up tendency proportional to the increased airspeed is desirable in any rudder-only model. This is the basic element that allows a rudder-only ship to enter and complete a maneuver. Therefore, in the desire to increase the penetration factor, and still maintain good stunt quality, we must increase the wing loading and power, so the angular flight difference between the wing and stabilizer is greater.

Another factor equally important in obtaining good penetration, combined with stunting quality, is the selection of the proper wing and stabilizer airfoils. The flat-bottomed, medium-lift section is desirable for the wing, because it must be flown at higher airspeeds to create sufficient lift for the wing loading. Also, it is less prone to aft center of pressure travel when used at low angles of attack, thus minimizing the tuck-under condition. The symmetrical stabilizer section was



chosen over the sometimes-used lifting section, because I did not want any change of lift, with respect to changing airspeeds, on the tail section.

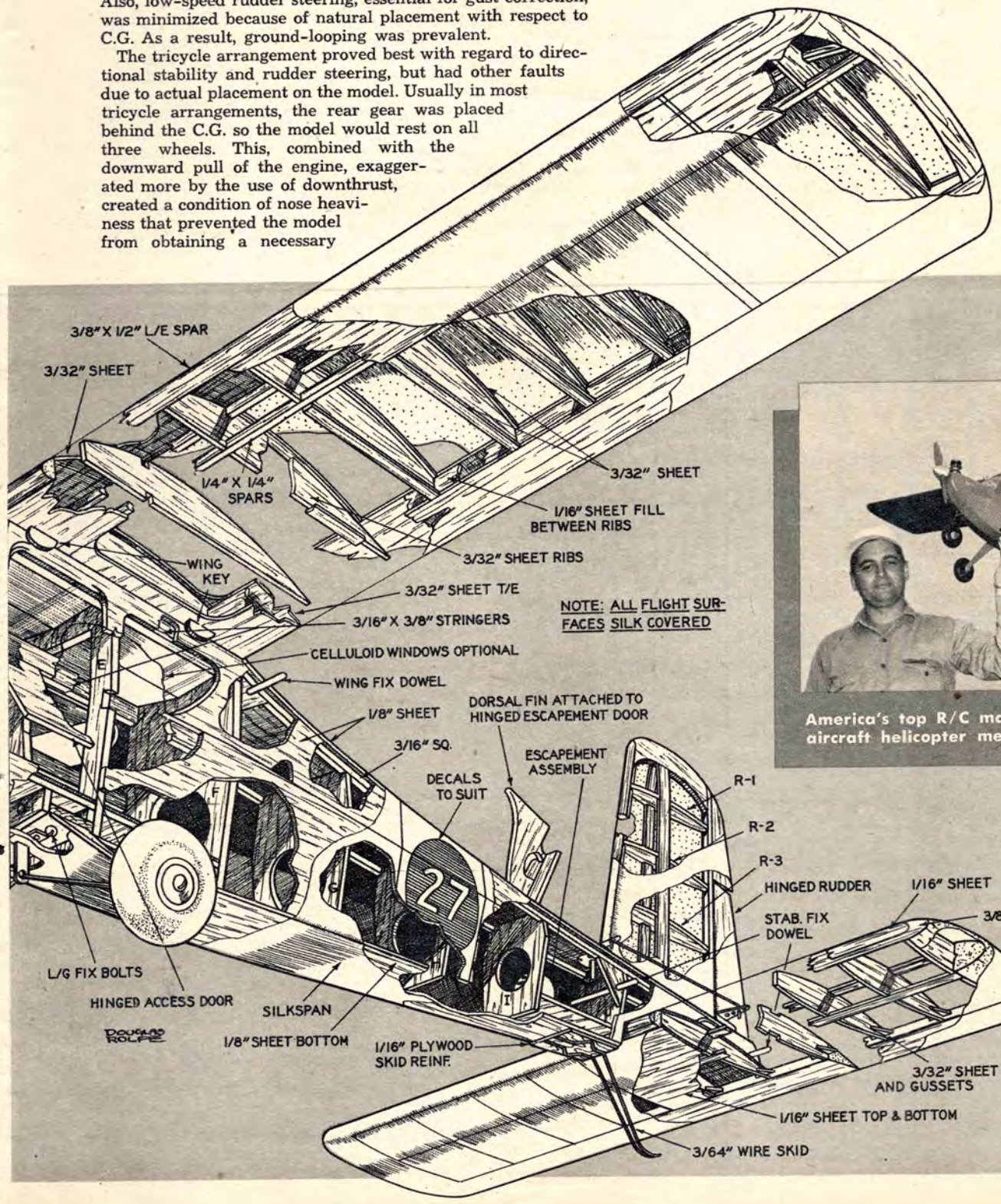
Last, but not least, was the application of a clean design layout to minimize drag. To summarize all the foregoing: The use of the higher wing loading, increased power and proper wing and stabilizer airfoils, combined with minimized drag, have increased the penetration factor in *High Q* for contest application.

The next item to be given considerable thought was the design of strong, but functional landing gear. Again, it had been noted that a lot of models, although overpowered, did not obtain a proper take-off and/or landing, due to improper gear type or placement. The common two-wheeled variety was at fault primarily because of poor directional stability. This was noted throughout both take-off and landing roll. Also, low-speed rudder steering, essential for gust correction, was minimized because of natural placement with respect to C.G. As a result, ground-looping was prevalent.

The tricycle arrangement proved best with regard to directional stability and rudder steering, but had other faults due to actual placement on the model. Usually in most tricycle arrangements, the rear gear was placed behind the C.G. so the model would rest on all three wheels. This, combined with the downward pull of the engine, exaggerated more by the use of downthrust, created a condition of nose heaviness that prevented the model from obtaining a necessary angular attack at normal speed, for take-off. Some fellows corrected this by lowering the nosewheel, thereby positioning the model for a natural angle of attack, but as a result only good take-offs were obtained. Because of the low nosewheel the model would invariably bounce upon landing.

To minimize or completely eliminate the above conditions, the tricycle landing gear was selected—but so positioned that the fuselage glide descent angle governed nosewheel height with respect to main gear. It was so arranged that all three wheels were to touch the ground at once. This, combined with the placement of the rear gear forward of the C.G., lightened the nosewheel load to the point where necessary angular attack was gained at lower speed. The end point result was a shorter run and minimized zoom after R.O.G.

In actual practice, *High Q* statically rests upon the main



America's top R/C man is 33, a senior aircraft helicopter mechanic from Ohio

gear and tailskid. When the engine is started and the model released, it will begin its take-off on all three wheels. After about 10 or 20 feet the nosewheel rises and the model continues on the main gear only. Because of its placement close to C.G., low-speed rudder steering is very effective. After about 60 feet, depending on wind condition, the angle of attack is regulated and the model will R.O.G. Upon landing, natural bounce is minimized, but not entirely eliminated. This can be corrected, however, after a little practice on the key switch. Before touchdown, give the model slight control to create a shallow dive, then opposite control to neutral. The result is an increased speed that will flare out landing, which, if executed properly, eliminates all bounce.

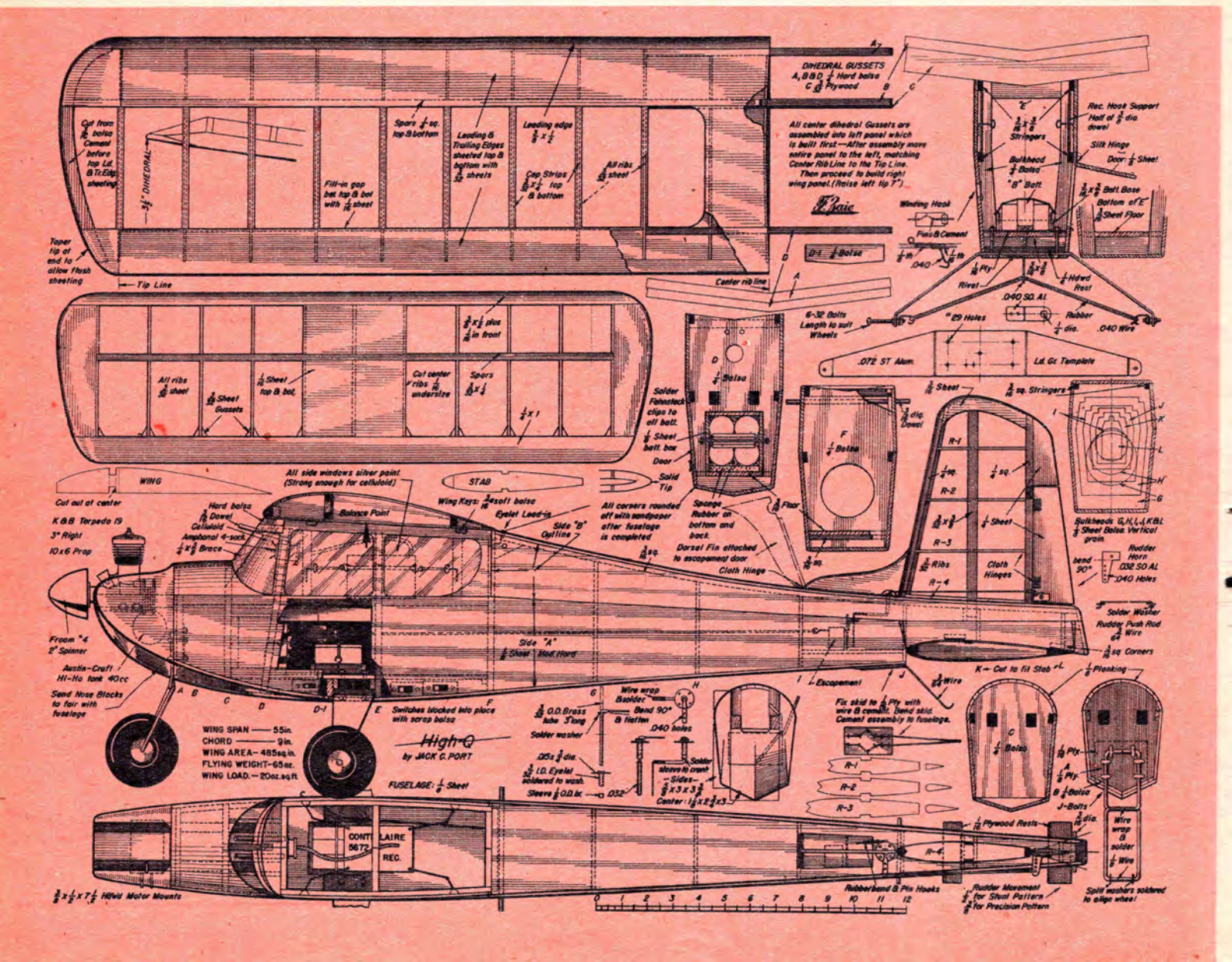
Although any radio equipment may be adapted to *High Q*, the original model was equipped with "Controlaire." This is natural, because I am the designer-manufacturer, and operate a spare-time business to defray the expenses of model building. The receiver is my new 5672 hard tube unit, using the Sigma 4F relay and the CK-5672 sub-min tube. The escapement is a self-neutral type, and the transmitter a crystal unit, using the 6C4 tube. Full particulars are available from Ace Model Supply—331 N. Elm St., Fairborn, Ohio.

Construction-wise, *High Q* is based on simplicity and the much-needed strength factor for contest survival. You will find it easy to build, as assembly is conventional and drawings are detailed. Because of this, I will limit information to basic procedure on fuselage and wing.

Fuselage. First, fabricate from equal strength balsa two primary side panels to outline lines A. Next, cement the 3/16" x 3/8" stringer to each side as shown. Now take the two side panels, with former positions marked, and cement formers into place, starting at cabin and working toward the tail, then finally the nose. Rubber bands will assist in holding the assembly together until dry. Next, cement the 3/16" square turtleback and 3/16" x 3/8" top wing-rest stringers into place. Now add separate cabin window section sheeting and side turtleback sheeting as shown by outline lines B. Next, add maple engine mounts, then drill holes and secure blind mounting nuts. Next, fabricate radio section flooring, which extends and cements to each cabin side and former position shown. Now add main and nose gears, securing main gear with 4-40 bolts. A local sheet metal shop will fabricate main gear at a small cost.

At this point all radio wiring is done. This includes installation of all switches, battery boxes and related equipment. On original model, all wiring was installed under the radio section flooring and terminated at the amphonal quick disconnect plug, with battery leads extending through floor to battery Fahnstock connectors. All wiring should be soldered neatly and cemented to structure to prevent vibration failure at connections. Before continuing, install receiver and give complete operational check. If O.K., continue by fabricating nose blocks and tank installation.

Incidentally, the tank shown will operate the Torp .19 about 6 minutes, plugged, and 4 minutes wide open, just right for the present rules. The tank is wedge-fitted into nose


DIHEDRAL GUSSETS
A, B & D 1/16 Hard balsa
C 1/16 Plywood
All center dihedral Gussets are assembled into left panel which is built first.—After assembly more entire panel to the left, matching Center Rib Line to the Tip Line. Then proceed to build right wing panel. (raise left tip 7")
Cut from 1/16 balsa. Cement before top Ld. & Tr. Edge sheeting
3/4" DIHEDRAL
Spars 1/4 sq. top & bottom
Leading & Trailing Edges sheeted top & bottom with 1/16 sheets
Leading edge 1/8 x 1/4
Cap Strips 1/8 x 1/4 top & bottom
Fill-in gap bet top & bot with 1/16 sheet
All ribs 1/16 sheet
Taper tip at end to allow flush sheeting
Tip Line
Center rib line
Rec. Hook Support Half of 1/8 dia. dowel
Stringers
Silk Hinge
Door 1/16 Sheet
Bulkhead 1/16 Balsa
"B" Batt.
1/8 x 1/8 Batt. Base
Bottom of E 1/16 Sheet Floor
Winding Hook
Fuse & Cement
1/16 Ply
Rivet
1/16 Hdwd Rest
.040 SQ. AL
Rubber 1/4 dia.
.040 Wire
6-32 Bolts Length to suit Wheels
"29 Holes
.072 ST. Alum.
Ld. Gr. Template
D-1 1/16 Balsa
1/16 x 1/8 plus 1/16 in front
All ribs 1/16 sheet
1/16 Sheet top & bot.
1/16 Sheet Gussets
Cut center ribs 1/16 undersize
Spars 1/8 x 1/4
1/2 x 1
Solder Fahnstock clips to all batt.
1/16 Sheet batt. box
Door
Solid Tip
1/16 Balsa
1/16 sq. Stringers
1/16 Sheet
1/16 dia. Dowel
Floor
Sponge Rubber on bottom and back.
Dorsel Fin attached to escapement door
Cloth Hinge
R-1
R-2
R-3
R-4
1/4 sq.
1/8 x 1/8
1/16 Ribs
Cloth Hinges
Bulkheads G, H, I, J, K & L 1/16 Sheet Balsa Vertical grain.
Rudder Horn .032 SQ. AL
.040 Holes
bend 90°
Solder Washer
Rudder Push Rod 1/16 Wire
1/16 sq. Corners
WING
STAB
All side windows silver paint (Strong enough for celluloid)
Cut out at center
Hard balsa
1/16 Dowel
Celluloid
Amphenol 4-sock
1/16 x 1/8 Brace
Balance Point
Wing Keys: 1/16 soft balsa
Eyelet Lead-in
Side "B" Outline
All corners rounded off with sandpaper after fuselage is completed
1/16 sq.
K & B Torpedo 19
3" Right
10 x 6 Prop
Froom "4" Spinner
Austin-Craft Hi-Ho tank 40cc
Sand Nose Blocks to fair with fuselage
Side "A" 1/16 Sheet Med. Hard
Escapement
K — Cut to fit Slot — L
1/16 Planking
1/16 Wire
Fix skid to 1/16 Ply with wire & cement. Bend skid. Cement assembly to fuselage.
Switches blocked into place with scrap balsa
High-Q
by JACK C. PORT
FUSELAGE: 1/16 Sheet
WING SPAN — 55in.
CHORD — 9in.
WING AREA — 485sq.in.
FLYING WEIGHT — 65oz.
WING LOAD. — 20oz.sq.ft
Wire wrap Baldor Bend 90° & flatten
.040 holes
Solder washer
.065 x 1/2 dia.
1/2 I.D. Eyelet soldered to wash.
Sleeve 1/4 O.D. tx — .032
Solder sleeve in crank — Sides — 3/16 x 3 x 3 — Center: 1 1/2 x 2 1/2 x 3
O.D. Brass tube 3" long
CONT LAIRE 5672 REC.
1/16 Plywood Rests
J-Bolts
1/16 dia.
1/16 Ply
B 1/16 Balsa
Wire wrap & solder
Wire
Solid washers soldered to align wheel
Rubberband & Pin Hooks
Rudder Movement for Stunt Pattern 1/8 for Precision Pattern
3/8 x 1/2 x 7 1/2 Hdwd Motor Mounts
0 1 2 3 4 5 6 7 8 9 10 11 12

blocks and cemented. Check for leaks before installation. Next, add top and bottom fuselage sheeting and planking. After all sheeting is applied, sand well and fair in nose blocks to fuselage contour. Then cover entire fuselage with Silkspan or similar paper to give added strength and minimize wood grain for proper finishing.

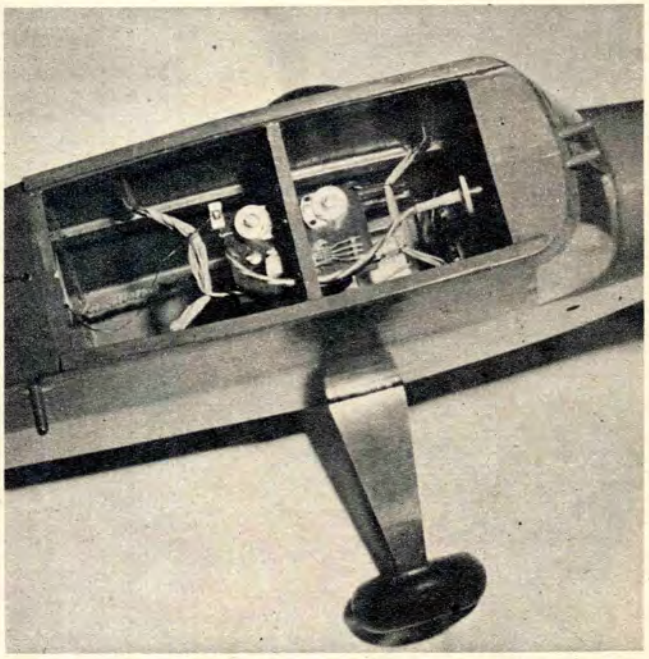
Wing. Effectively this is built from bottom up. Pin bottom leading and trailing edge sheeting to drawings. Note: make bottom leading edge sheeting wide enough to extend under the 3/8" x 1/2" leading edge. Cement 3/8" x 1/2" leading edge and 1/4" sq. bottom spar to bottom leading edge sheet, add 1/4" dihedral gussets, then cement all wing ribs into place. Next, fabricate and install wing tip, then cement top 1/4" sq. spar into place. The top leading edge sheeting is applied by butt joining first to leading edge, allowing to dry, then pulling down to top 1/4" spar. Next, apply top trailing edge and all top rib capstripping. Do not apply center sheeting until both wing panels are built. Allow this panel to dry 18 hrs., then shift panel to left, matching center rib line to tip line, then proceed to build right panel. All flight surfaces of model are covered with silk, and fuel-proof liquids used throughout.

To test and adjust *High Q* for flight is not difficult because standard procedure is used. Start by making a complete alignment check of the flight surfaces. If warpage or misalignment is present, correct before any flight attempt. For best characteristics, the model should balance 4" (plus or minus 1/4") from the leading edge of the wing. Set rudder travel for no more than 3/8" throw and plug the engine for limited power. The plug is made from 1/4" split dowelrod and fitted, so as to stop up half of the venturi opening. Before actual power flight, glide-test to insure initial trim. The model should go straight ahead from a running hand launch and have no noticeable stall tendency whatsoever. Although correct wing and stabilizer angular difference is shown on drawings, slight differences will exist; correct these by shimming stabilizer only.

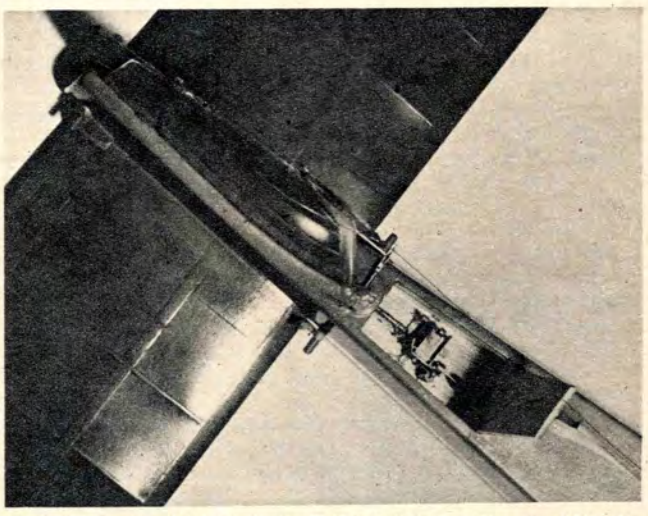
For first power flight, limit engine run to about 1 minute, by limiting fuel. Check radio equipment for proper operation, then hand-launch from a running start into the wind. Do not attempt to control the model, unless bad tendencies are present; if so, your radio is available for correction. Allow the ship to obtain reasonable altitude, then feel it out. Do not over-control, but rather observe flight characteristics for further correction. From here on, the actual trim and rudder throw will be dependent upon what type of flight you desire.

At the Nationals, for the stunt pattern, I used full power, with a 10/6 Tornado prop, rudder throw set for 1/2 inch and angular difference about 1 degree more than shown on drawings. For precision, I plugged the Torp, removed about 1 degree angular difference, and limited rudder throw to 3/8 inch. This is necessary, because no one adjustment is good for both precision and stunt patterns.

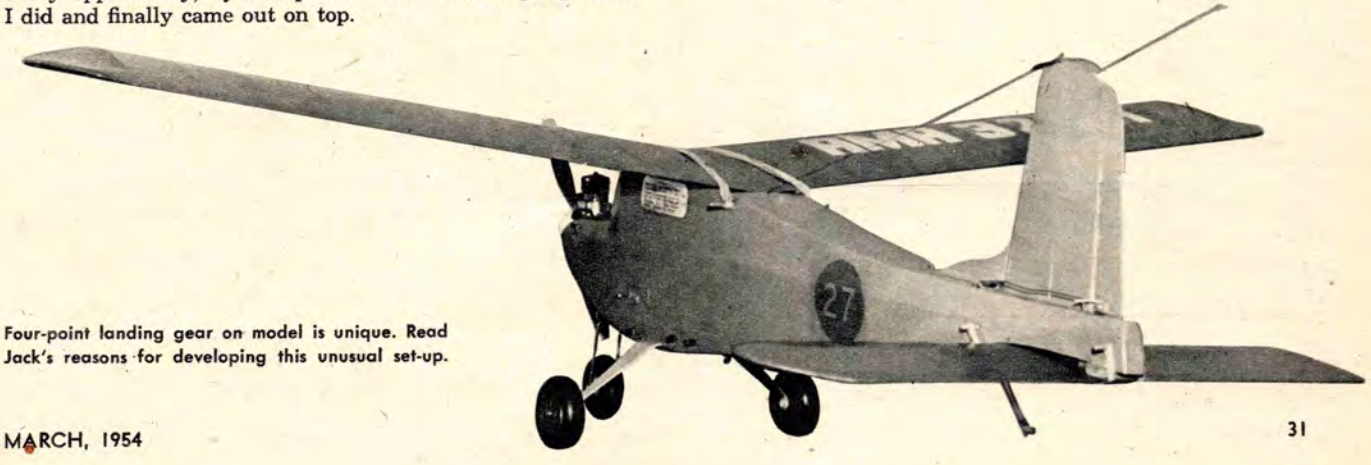
Now one last thought. *High Q* is a good model, with a proper balance of inherent stability, penetration and strength, so necessary for contest use. It is not tricky, but very easy to fly. Its performance on the contest field will be limited only by your experience on the key switch. For this reason, at every opportunity, fly and practice the AMA flight pattern. I did and finally came out on top.



Receiver used by Port on winning flights was the 27¼ mc Controlaire #5672 hard-tube unit which he designed, manufactures. It utilizes the CK-5672 sub-miniature tube; relay was Sigma 4F.



Control room on High-Q. Jack started building models in 1931; his first gas engine was a Brown—he put it in a Berkeley Buccaneer. Started RC'ing in 1949, studied electronics to perfect models.



Four-point landing gear on model is unique. Read Jack's reasons for developing this unusual set-up.

Martin P4M-1 MERCATOR

By FRANK LASHEK and CAL SMITH

This Navy patrol bomber scales down into a fairly simple twin-engine control liner

■ A little-publicized phase of Naval operations is long-range patrol work. The smaller fighters and anti-submarine attackers may have more roar and zoom, but prominent in the background is the big solid patrol plane. It's not the fastest aircraft in the Navy but it can fly for hours on end through all kinds of weather to seek out and photograph an approaching enemy, sow mines and be a watchdog over the nation's sea approaches.

Martin's P4M-1 fulfills all these functions admirably. Naval aviators who fly it claim it to be more trouble-free than most. It has no bad habits, and although patrol flying can be grueling the P4M makes the job less so.

The Mercator is a big airplane spanning 114 ft. and is 84 ft. long. Though pretty conventional in appearance, there are a few surprises under that blue paint. She's not a twin-engine aircraft. Those big nacelles house both prop and jet engines. Two 3250 hp Wasp Majors turn the props and two Allison J33 turbojets deliver 4000 lbs. thrust each. Able to cruise at a comfortable 200 mph for 3000 miles, the prop and jet combination boosts speed to over 350 mph when additional speed is needed. The jets are also used for take-off when heavily loaded.

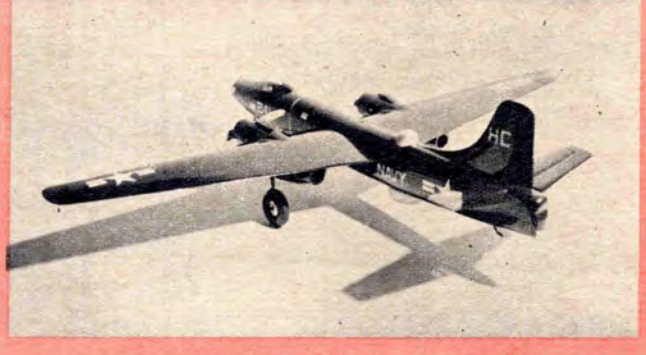
The Mercator normally carries a crew of nine men. There is ample armament. The nose and tail turrets carry 20-mm guns. The top turret has 50 cal. guns. The large bomb bay is fitted for carrying mines primarily. Search radar and long-range electronic equipment enable the big ship to fulfill its reconnaissance missions.

The twin-engine model fan will find the Mercator a real natural for building and flying. There are lots of straight lines to make the job easier and the size is not unwieldly.

Scaled at 7/16 in. = 1 ft. from factory three-views, the model has a span of 49 7/8 in. and a length of 37⅝". The original model was patterned after the prototype XP4M-1; however, the plans incorporate a few changes made in production aircraft which won't bother the flying qualities. Changes from prototype are: Fin and rudder are enlarged, tail turret is extended, wing has flat center section with dihedral outboard of nacelles. The original had straight dihedral.

It would be fine if every model could be scaled down exactly with everything a miniature duplicate of the big aircraft. Such is not always the case, however. Props, wheels and other little items don't always match sizes avail-

To facilitate good flying with reasonably sized props, nacelles have been moved outboard 5/16 in. to permit prop clearance. Gear was extended.



Although fuselage looks quite streamlined, because of straight top it is constructed with little difficulty. Top half is built first on crutch, planked.

able commercially. So some allowances must be made with some deviation from scale in the interest of better and easier building. The Mercator has a few deviations from scale, which we hope won't make anybody mad: Nacelles are moved outboard 5/16" to permit prop clearance at fuselage. The landing gear is extended 1" to allow more prop clearance above ground. The size of nose wheel is increased from 1⅜" dia. to 2" dia. for better ground handling.

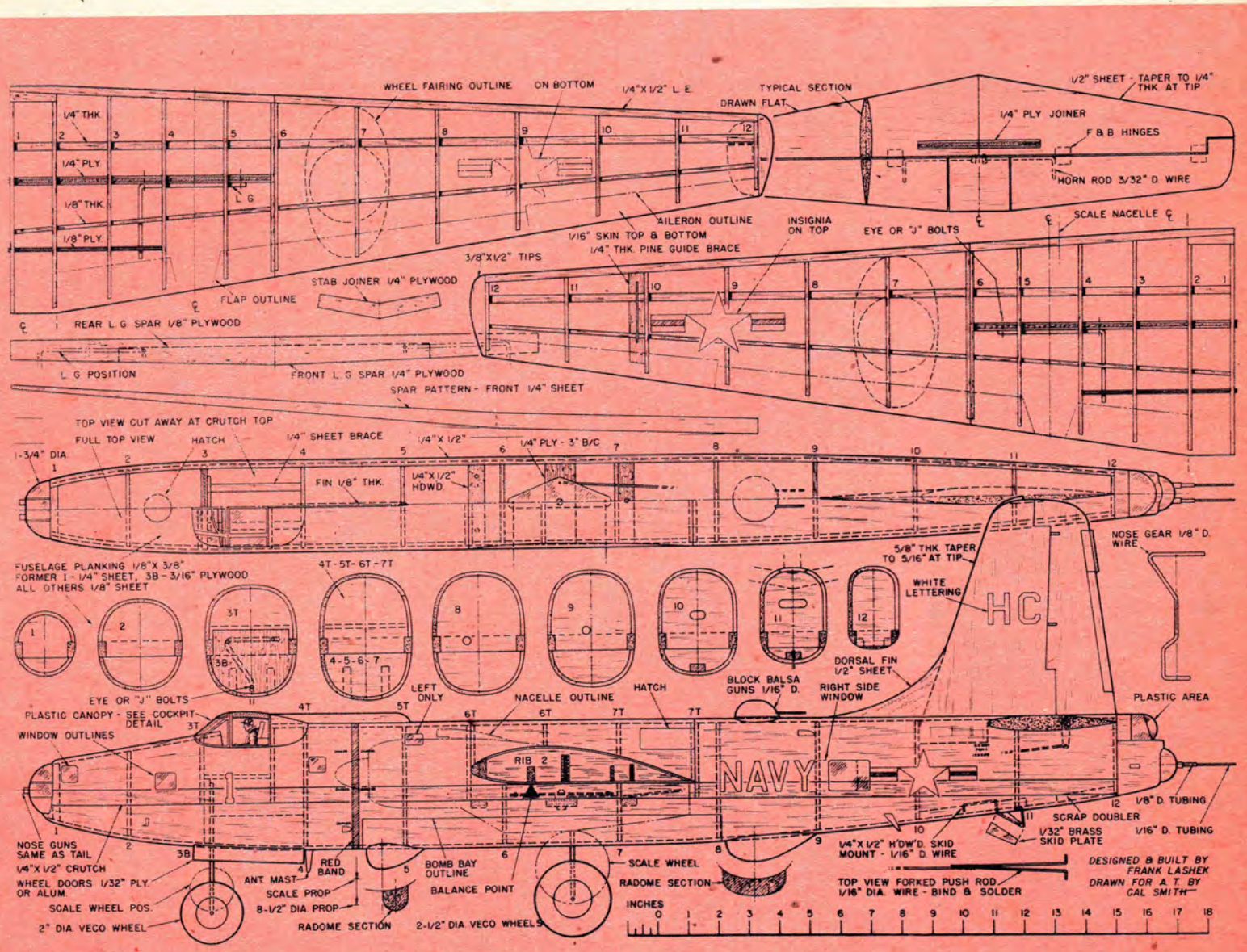
The original model weighed in at 4 lbs. even, with ignition O&R .23's turning 9/6 Top Flite props. The ignition system weighs ⅞ oz., so flying with glow engines would save some weight. K&B .19's are shown on plans; props should be 9/6 Top Flites cut down to 8½" dia.

Construction is conventional throughout. Fuselage is crutch and former with strip planking. Wing is built up with sheet planking. Tails are solid sheet and nacelles are hardwood, balsa block combination. The original model had wing removable from fuselage for ease of transportation, but this feature need not be built in if you prefer a one-piece model.

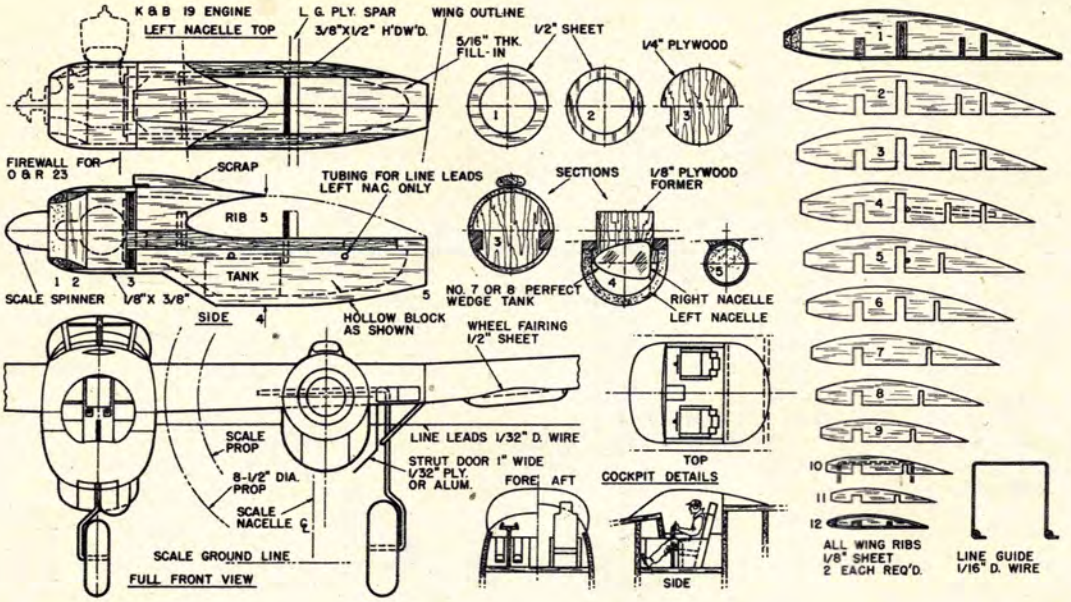
Construction can be started with fuselage. The crutch is laid down over the top view and the top section of the formers are cemented in place. The lower portion of each former can serve as a crosspiece between crutch or ⅛" x ½" or ¼" x ½" strips can be used instead. Note that formers 4T-5T-6T-7T are duplicates of each other with minor variations over wing center section. Plank top portion of fuselage with ⅛" x ⅜" strips. Make provision for removable section between formers 6T and 7T if wing is to be removable.

When planking is complete, the structure can be taken up from workboard. Make horizontal tail surfaces now. These consist of ½" sheet tapering in thickness to ¼" at tips. Carve symmetrical airfoil section. Note separate control horns on each elevator. Stabilizer and elevators are joined with F&B hinges. Stabilizer halves are joined with ¼" plywood joiner. Stab should be fitted in place on fuselage, carve planking to match lower curve of stab. Cement ¼" plywood bellcrank mount to bottom of crutch between formers 6 and 7. Make up forked pushrod and join to bellcrank and elevator horns. Check for good free elevator action before proceeding with fuselage construction. Remedy any trouble now, before fuselage is closed up for good.

Proceed next with bottom portion of fuselage. Install cockpit floor before adding former 3. Add ¼" x ½" hardwood strips across crutch for wing hold-down nuts if desired. Bend nose gear to shape and install on plywood former 3 before putting former in place. Add lower formers along entire fuselage. Don't forget wire skid and ¼" x ½" hardwood mount. Complete planking of lower fuselage. Tail turret is carved from block balsa, nose turret can be carved from block or simulated with clear plastic toy ball or rattle if proper size is obtainable. Cockpit canopy is not available commercially so one of proper shape will have to be made. Dorsal fin, fin and rudder are carved from sheet and cemented in place on fuselage top. Note front part of fin extends down behind former 10. Rudder is offset to right about ½".



MARTIN MERCATOR P4M-1



Wing construction can be tackled next. Cut out the ribs from ⅛" sheet. Make balsa spars to pattern shown. Build wing over plan one half at a time. Note dihedral break at rib 6, so build center section flat first, then lift up and build outer panel flat over plan. Plywood landing gear spars serve as wing panel joiners and these can be installed when wing panels are joined. Bend main landing gears to shape and install on plywood before slipping into place in wings. Wings are planked with 1/16" sheet, use 6" wide sheet if obtainable. Wheel fairings are cemented in after planking is done.

Engine nacelles are next. Structure is built up around two ⅜" x ½" hardwood strips glued to the bottom wing surfaces. These strips are carved to match bottom wing curve. A ¼" plywood firewall is glued across the front of the hardwood strips. Plywood formers are glued across bearers at wing leading edge and ¼" plywood landing gear spar. Vibration is quite a problem with wing mounted engines, so don't spare the glue (Weldwood) and gussets when joining these parts. Top and bottom of cowlings are block balsa carved to shape and cemented in place. The K&B .19 can be radially mounted using K&B radial mount disc. Front portion of cowling is two layers of ½" sheet with ⅛" x ⅜" planking. Two lengths of ⅛" aluminum tubing are placed across left nacelle for line lead passage.

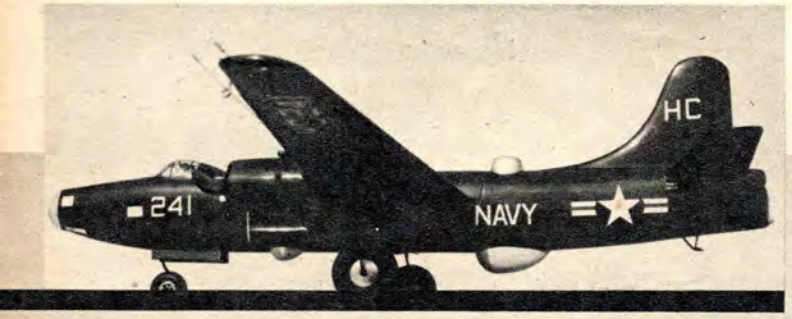
This completes the wood working. Cockpit details are furnished for those interested in dressing up the model inside. There was no accurate information available for the cockpit, but the detail is drawn to proper scale size. Seats can be built up from sheet and throttle console made of block. Instrument faces would be slightly less than ⅛" in dia.

The contest-winning finish on the original model is no accident, because its main ingredient is elbow grease. Finishing procedure is this: Bare wood is sanded smooth and given two coats of clear dope, then lightly sanded. Lightweight tissue is then clear doped over entire model. Give tissue two more coats of clear dope, sand lightly. Duco auto primer is next applied, either sprayed or brushed. Build up about four or five coats, whatever it takes to fill pores and grain marks. Sand with finishing paper dry, then wet finishing with 400 grit. Then spray final color, wet sand between about three coats. Rub down final coat with rubbing compound, follow with Simoniz Kleener. Wax after decals and final details are in place.

Add final details such as wheel doors, radomes, turret and windows. Insignia and lettering can be decals. Windows are simulated with aluminum dope. Guns can be aluminum or brass tubing. Be sure model balances at point shown. Add ballast as needed. Model flies well on 70 ft. wires, and will fly on one engine after becoming airborne.

Some scale fans favor ignition and gas-oil operation to eliminate fuel-proofing problems. The original Mercator used O&R .23's with relay in circuit to cut both engines together; this eliminates single engine problems. Use fiber or plastic bellcrank with line leads insulated to carry juice to relay. Battery for relay power is carried at handle with on-off switch. Use insulated flying wires. Ignition batteries are carried in fuselage between former 5 and 6, four pencells are used. Coil and condensers are in each nacelle behind firewall.

For Bill of Materials, see page 73.



Midnight Blue dope is applied over auto primer to develop prize-winning finish. Full size construction plans are available. Data on these may be obtained from Hobby Helpers or "AT."

By JOHN BERRYMAN

Fuel Pumps and Pressure Tanks

Practical approach to a sometimes obscure subject; sounds quite easy!

■ For quite a while we thought, perhaps as you do, that fuel pumps were tricky, a machine-shop job for the speed hot-shot. That was before we tried them and found out how simple they really are.

Let's see how a fuel pump can be built into a disc-rotary motor such as a Hornet, McCoy, Forster.

The pump is no more than a small hole drilled through the rear crankcase cover or "backplate." The hole should be drilled at a point in the backplate 180 deg. of rotation around from the intake port, and so located that the opening in the disc valve will pass over it. We call it the "bleed-hole." You will see, by rotating the crankshaft with the backplate off, that the valve opening will cross the bleed-hole as the piston comes down, and that the rotor will seal the bleed-hole as the piston starts upward on the compression stroke.

1

We have said drill the hole 180 deg. around from the intake port. This location is not especially critical, and ten degrees one way or the other will make little difference. All motors, however, are timed somewhat differently (we refer to rotary-valve timing) and you should look yours over to be sure that the bleed-hole is pretty well centered in the valve opening when the piston is just about to open the transfer port on the downstroke.

2

Now you have a way to bleed pressure. The next thing is to pipe the pressure into your fuel tank. For a number of reasons, a very tiny hole, No. 80 wire gauge size, is best. How can you drill a No. 80 hole in your crankcase and conveniently pipe the pressure to your tank?

We follow West Coast practice on this. First drill a fine hole about ¾" lengthwise through a 6-32 steel machine screw. With a No. 36 wire gauge drill, drill the backplate at the bleed-hole location, and tap with a 6-32 thread. Now cut the pierced machine screw about ⅝" long, so that you have a threaded tube, thread it into the hole you have just tapped until it is flush with the inside of the backplate, and secure it there with a 6-32 nut. Leave about

3

⅜" of the pierced machine screw sticking out the back of the crankcase to slide a length of fuel line onto.

To make sure the pierced screw does not turn, file the 6-32 nut to fit around some extrusion in the backplate casting. Making sure it is locked, sweat-solder the screw and nut together. Since the nut cannot turn, and the screw is sweated to it, you have a rigid fixture.

Photo 1 shows two Hornet backplates, one with fuel pump installed, and one without. Notice that the letters "Hor" of "Hornet" were ground away to give the nut a flat seat, and that the nut has been filed to fit snugly against the part of the casting which supports the bearing. Photo 2 shows the backplate mounted on the Hornet motor. Photo 3 shows a bottom view of a Dooling .29 with pump installed. In that case, the ribs on the backplate provided excellent locks. The nut was filed accurately to fit, and cannot turn.

Lest you conclude that we drill a No. 80 hole in the machine screw, we will rush to explain. It can be done, of course, but not with simple equipment. Here's the easy way:

5

Use a No. 60 drill for piercing the 6-32 machine screw, which you can readily get through ¾", and later restrict the hole so drilled down to No. 80 size. You can do that in either of two ways:

1. After you have pierced the machine screw and cut it off so as to make a threaded tube open at both ends, solder the outer end shut and drill through the solder with a No. 80 drill held in a pin-vise. Illustration No. 4 shows how that is done.

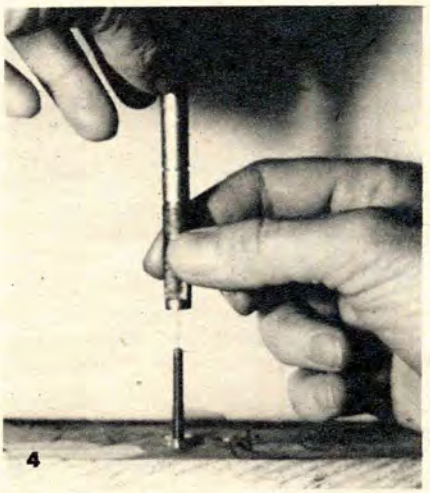
2. Cut a length of copper fuel line about 5/16" long and solder both ends shut. Pierce the solder with the No. 80 drill as

6

described above and insert the length of copper in the plastic tube used for pressure-bleed line.

So much for backplates. How can all this be applied to shaft rotaries? Just a few changes. First, drill the bleed-hole through the part of the casting holding the main bearing directly *below* the intake port. The bleed-hole should be 180° of rotation around from the intake, and also so located that the opening in the shaft-valve will pass over it.

Stabilizing the pierced screw is somewhat harder than in the case of backplate installations. One way is to tap another hole, say 2-56, close to the 6-32 hole, but not completely through the bearing. You can screw a stud into that hole to use as a post to stabilize the nut, sweating the nut both to the pierced 6-32 and the 2-56 stud. Photo 5 shows a pump installed on an Ohlsson 60. No stud was required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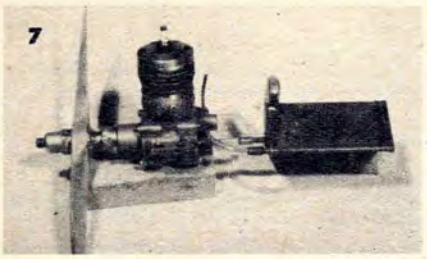
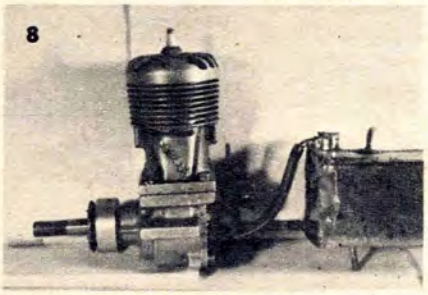

7

here because there was a well located extrusion on the casting.

Use care to set your pierced screw nicely flush with the rotor. Valve action will be more positive, and you won't bleed pressure back into the crankcase as quickly.

To drill a bleed-hole for a shaft-rotary, you must remove the shaft, of course. With a disc-rotary, take the backplate off the motor. It is best, also, to remove the rotor from the backplate. This gives you a chance to lay the backplate flat on its inner face under your drill press, so that you get a nice square hole. It is also a lot easier to clean up metal chips, and get a nicer set on your pierced screw. Be sure to clean up the inner face of the backplate and the main bearing of shaft ro-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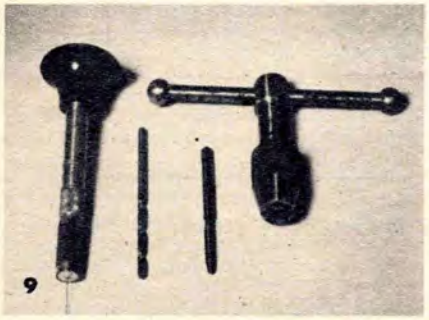
taries, lest any burrs scar the rotor. This is particularly important on Dooling, which has a plastic rotor.

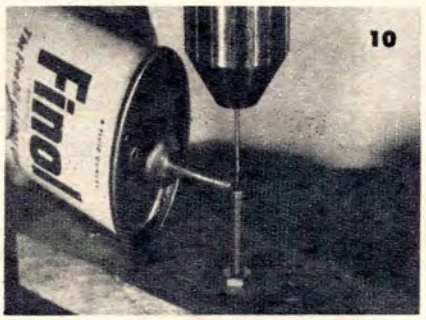
Now for the second job, the pressure tank itself. Its simplest form is a converted stunt tank. Make one more opening in the front of a typical wedge tank and solder in a half-inch length of copper fuel line. Photo 6. Hook this new line to the bleed-hole with plastic fuel line small enough to be a tight fit for both the pierced screw and the tube added to the tank. It is in this line that you may insert the short length of copper fuel line soldered shut and pierced No. 80. That length of copper acts somewhat as a one-way valve. It passes vapor quite readily, but passes fuel back into the crankcase much more slowly.

Now fill that tank, connect the filler and overflow lines together with a length of plastic fuel line, so as to make the tank airtight. Presto! You have a pressure


9

tank. Photo 7 shows how this tank is hooked up to a disc-rotary motor. Note that filler and overflow tubes are connected by a length of fuel line. This kind of tank has one serious disadvantage. It may flood your motor badly if it does not start on the first couple flips. Here's why:

When you have filled the tank with fuel, admission of the first amount of vapor raises pressure in the tank to its full amount, perhaps to five pounds a square inch. You flip the prop once. Say

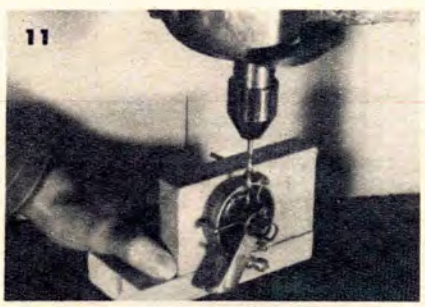


10

that nothing happens. You fiddle around a moment, reaching for the gas-can to prime her, and while you do so, fuel—not vapor, since that went to the top of the tank—but *fuel*, is spurting back through the bleed-hole *into the crankcase*. Some additional fuel is being forced through the needle valve, but a share of this drips out and does not contribute to flooding. In about five seconds you can flood a motor in this way past any possible hope of starting, since the more you crank it, the more fuel you pump into it. If this should happen, unhook the tube connecting filler and overflow, and crank the motor dry.

The right way, of course, is to build a better tank. The answer is to put the pressure-bleed entry to the tank *above* the fuel level, so that only *vapor* may bleed back should the motor not start on the first flip or so.

A small pressure dome built on the top of the tank does the job. Build it from


11

scrap tin or brass shim stock like a small tin-can, say ¼" high and ¼" to ⅜" in diameter. Solder it to the top of your completed tank, near the front, first drill a No. 80 hole through the top of the tank where the dome is to be located. Photo 8 shows such a typical pressure dome installation. This old tank was chosen for a photo since the bleed line runs on the outside, where you can see it.

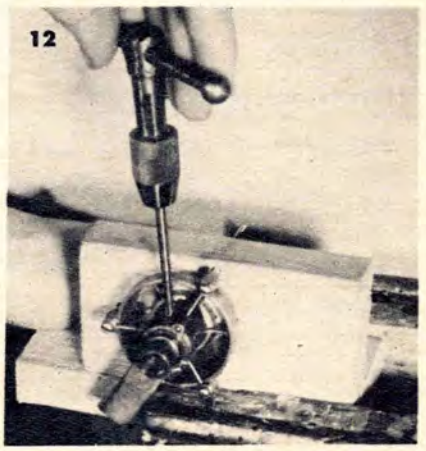
A cleaner installation is to run a copper tube from the front of the tank through inside the tank and out the top, cutting it off say 3/16" over the top of the tank. Drill the No. 80 hole beside it, providing entry for pressure into the tank, and add the pressure dome so that it covers the stub of the bleed-line and the No. 80 hole.

You may object that such a pressure dome works only when the ship is upright, and that it fills with fuel when you fly inverted. You are right, but once the motor is running, the "bleedback" of fuel is not significant by comparison with the amount of fuel admitted through the needle valve. It is only when fuel can spurt directly into the crankcase and cause flooding while starting that you care. And since (we hope) you start your motor with the ship upright, the pressure dome will take care of that.

Try the pressure dome. It works like a charm!

Beyond the tools you ordinarily use in model building, there are a few that you will need to put a fuel pump on your motor. They are shown in Photo 9. They are:

1. A No. 36 wire gauge high speed drill. Be sure of the size on this. Your drill index usually has drills by 64ths. While 7/64" looks a lot like a No. 36, it is not, and will give you bad threads.
2. A 6-32 tap and T-handle for the same.
3. A No. 60 wire gauge high speed drill (and a couple spares just in case).
4. A No. 80 wire gauge drill, H.S. or carbon, and a pin vise to hold the same.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The drill is shown in the pin vise in Photo 9, even if you can't see it.

A drill press is handy, or an electric drill mounted in a press, but enough care will let you do the drilling jobs with a twist drill. In the case of a drill press, we recommend you build simple jigs to hold your work. Two such jigs are shown in illustrations here.

One tricky job is that of drilling lengthwise through the 6-32 machine screw. For a jig, drill a 3/32" hole with your drill press through a piece of 1x2, countersink, thread the machine screw through it and lock with a nut. Use a center punch (or sharpened nail) to mark the center of the end of the screw, so that your No. 60 drill doesn't wander around looking for a place to bite. Press *very* lightly, oiling the bit every few seconds. See Photo 10. Back out after each millimeter or so to let the drill cool and to float out chips. If the screw smokes slightly, you are boiling the lubricant and have drilled too fast. A good way to break the drill.

Don't try drilling through a brass machine screw. You are much more likely to jam your No. 60 drill in the softer metal and break it. Steel is actually easier to drill, as our stock of broken No. 60's will testify.

Photo 11 shows another simple jig. You are looking at the front plate from an Ohlsson 60, being drilled No. 36 preparatory to tapping. The long 4-40s that hold the front to the crankcase have been used to hold the front to a jig. Note that the bleed-hole is not (*Continued on page* 78)

Wakefield Mates:

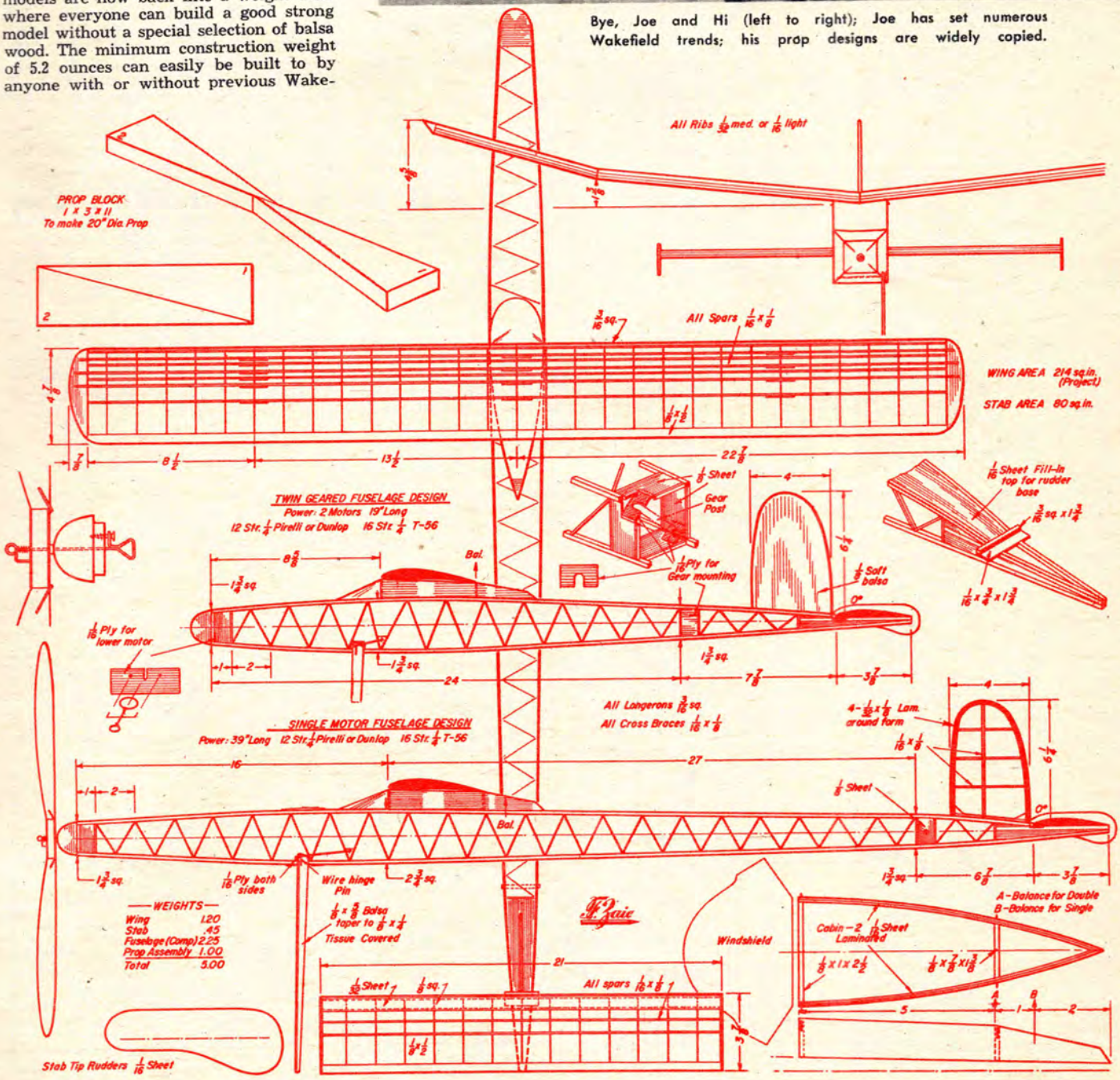
HI and BYE DOT

The experts' expert has a proven pair of flyers

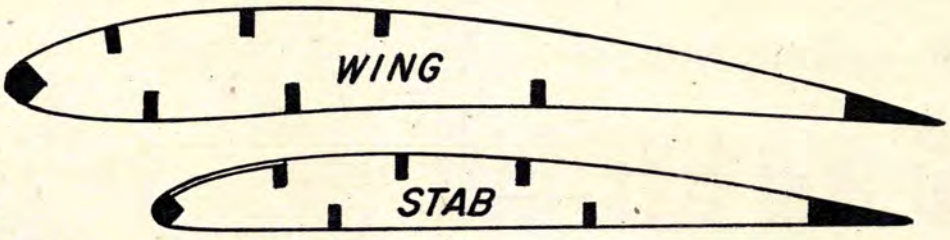
By JOE BILGRI

■ If you have been afraid to build a Wakefield on account of its light and fragile construction, the *Hi and Bye Dot* is neither light nor fragile in construction. With the new rule changes for 1954 Wakefield models are now back into a weight class where everyone can build a good strong model without a special selection of balsa wood. The minimum construction weight of 5.2 ounces can easily be built to by anyone with or without previous Wake-

Bye, Joe and Hi (left to right); Joe has set numerous Wakefield trends; his prop designs are widely copied.


All Ribs 1/32 med. or 1/16 light
PROP BLOCK
1 x 3 x 11
To make 20" Dia. Prop
All Spars 1/16 x 1/8
WING AREA 214 sq.in. (Project.)
STAB AREA 80 sq.in.
TWIN GEARED FUSELAGE DESIGN
Power: 2 Motors 19" Long
12 Str. 1/4 Pirelli or Dunlop 16 Str. 1/4 T-56
1/8 Sheet
Gear Post
1/16 Ply for Gear mounting
1/16 Sheet Fill-in top for rudder base
1/16 Ply for lower motor
Bal.
All Longerons 3/16 sq.
All Cross Braces 1/16 x 1/8
4-1/32 x 1/2 Lam. around form
SINGLE MOTOR FUSELAGE DESIGN
Power: 39" Long 12 Str. 1/4 Pirelli or Dunlop 16 Str. 1/4 T-56
1/16 Ply both sides
Wire hinge Pin
Tissue Covered
WEIGHTS
Wing 1.20
Stab .45
Fuselage (Comp) 2.25
Prop Assembly 1.00
Total 5.00
Windshield
Cabin — 2 1/8 Sheet Laminated
A - Balance for Double
B - Balance for Single
All spars 1/16 x 1/8
Stab Tip Rudders 1/16 Sheet

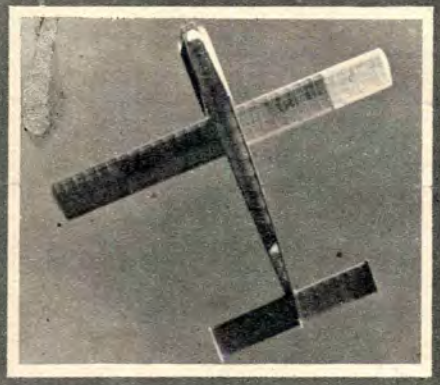
Wakefield building will be easier in 1954, says JB

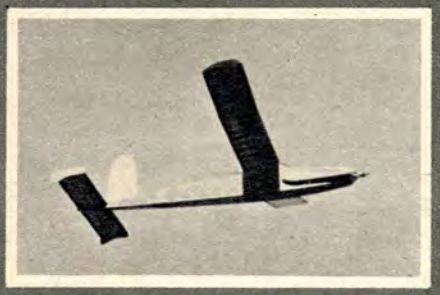


Full-size wing and stabilizer ribs for Bilgri's new 1954 models.

field experience; it's nearly two ounces heavier than the models of the past few years.

With only three different types of rubber motor (T-56, Dunlop, & Pirelli) which are available to everyone and a limit (2.8 ounces) of how much you can use, Wakefield flying is now on a more equal basis than gas models, for some engines are always more powerful than others. With weights and power equal, consistency and having a model to fit the weather conditions of the day will be more important than ever. On calm days when the thermals are few and far between it's hard to beat the long type, for its flat slow glide is difficult to equal with anything else, and on a windy day a short model with its tighter circles is usually better.





Climb and glide shots of Hi Dot; author Bilgri is famous world over as designer.

Modification experiments were first tried on models left over from the 1953 eliminations, and while some tests looked fairly good it showed that more would have to be done than taking out the gears and substituting a single motor or just shortening the motor length of the real long type if a person wanted the best possible model. A combination model was built using the same wing, stab and prop assembly on two different fuselages to see which would be the best, but the first tests with both combinations proved far better than was expected, so additional parts were made in order to have two complete models. The geared fuselage was tried, because a check on the winning geared models for the past five years (1949-53) showed that they did not have as high a power-to-weight ratio as some of the single-motored models that they beat; it could be that there is not as much loss of power through the gears as some think.

A lower aspect ratio than in the past was used, since both types of fuselages are shorter than in past years, and with all flying to be done under thermal conditions rather than in the early morning and late evenings, it must be remembered thermals have no preference when it comes to aspect ratios. The supposedly better gliding high aspect models always seem to take more power to climb as high as the lower aspect models, and the higher you get the stronger the thermals are.

For those that have built a long type Wakefield there is very little to say that is different from the long models of 1952 and 1953, but the shorter length due to the limited amount of rubber allowed makes the *Bye Dot* lots easier to fly and adjust, and the heavier construction makes handling easy. As long as the rules permit two models, I would suggest building both fuselages to see which you like best and which works best under the conditions of your locality. If you don't have gears and are unable to obtain them locally, write to me in care of Air Trails and I will send you the addresses of a couple of model builders who machine a few gears in their spare time.

Both fuselages are built from medium balsa and the difference in weight due to their length is made up by the gears in the shorter fuselage. No top view is shown on the plans for the short fuselage; it is square and the dimensions are the same as the side view. For those that have never built a Warren Truss type fuselage, one side is built as shown on the plans and for the other side the crossbraces run diagonally opposite, so that when the two sides are placed on top of each other X's are formed.

The cabin is constructed separately from the rest of the fuselage and is not cemented to it until all parts have been built and covered, so that the exact balance point can be obtained; if medium balsa has been used throughout the cabin location shown on the plans will be very close. The celluloid window is the last part of the model to be cemented in place. The landing gear strut is cut from ⅛" sheet, sanded to a streamlined shape and covered with tissue. It is 12" long.

The wing and stab ribs are cut from 1/32" medium or light 1/16" sheet balsa and should be pinned together, sanded and notched to have the spars in a straight line. The dihedral breaks should be reinforced with short pieces of 1/16" x ⅛" balsa running across the breaks. The rudder can either be built up as shown on the plans or cut from real light ⅛" sheet balsa. Both types were built and the weight is about the same.

The prop should be carved with very little camber and the blades thick enough so as not to flex, make it possible to maintain a fairly high rpm. A flexing prop takes a lot more power and extra strands of rubber cannot be added as in the past.

Motors of Pirelli or Dunlop are 12 strands approximately 39 inches long, or if T-56 is used—a thinner rubber—16 strands will be needed. Different batches of rubber will not always weigh the same, so that the motors may have to be made a little shorter or longer for the 2.8 ounce maximum. For the geared model the lengths of motors are only half as long, or a little over 19 inches each. The motors should be prewound and will stretch about 10 percent, making the length of the motors and the distance between hooks practically the same.

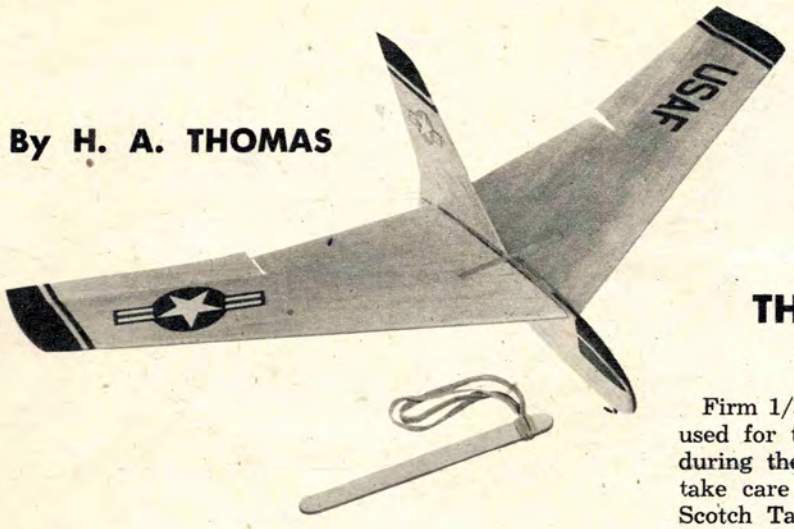
Both models are flown to the right under power and the glide can be to the right or left just as long as the circles are fairly tight, for tight circles are best in thermals and wind. The complete weight of both models should be about 5 ounces, and the balance of the weight is made up by placing clay inside the cabin under the wing close to the balance point; as the model picks up weight with age the clay is removed.

In the April issue:

THE NEW ENGLAND WAKEFIELD GROUP

presents its ideas and designs for winning Wakefield models under the new rules. This unusual and interesting collection has been assembled under the direction of Lee Renaud. Remember—the next "AT" will show the Eastern version of the '54 Wakefield.

By H. A. THOMAS



Whizzie

THE CATAPULTED WONDER

■ Not every modeler is a Dizzy Dean when it comes to tossing a hand-launch glider. But Jim Walker has proved that anybody and everybody can fly a glider with an elastic sling. These models produce more performance for the building effort expended than any other type.

This little flying wing can teach the fundamentals of adjusting this most modern of aircraft layouts. A unique assembly knack provides the transition in incidence which is the all-important stabilizing factor. From a positive root section incidence, the angle becomes negative at the tips.

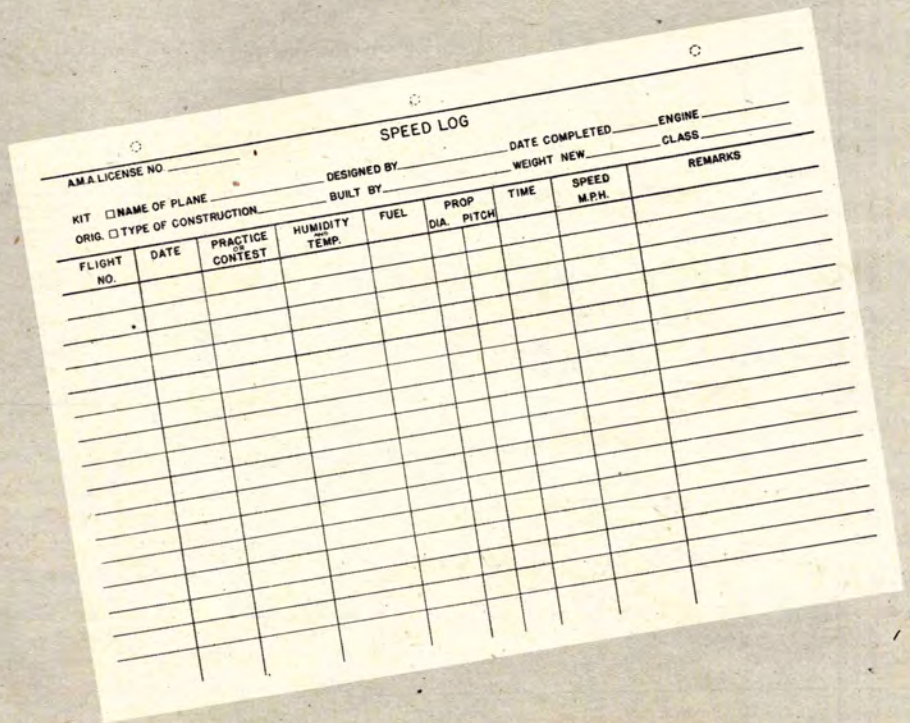
Firm 1/32 inch or fairly soft 1/16 inch sheet can be used for the wing skins. Moisten the outer surfaces during the cementing process and the curvature will take care of itself. Use numerous pins or pieces of Scotch Tape to hold the edge seams together. After drying, the wings can be sanded, doped.

Fit the launching hook into the notch provided for it in the plywood core. Clamp the body parts with clothespins while the cement hardens. The wing panels are assembled about the stub spar, with cement used liberally around the root joints. A final doping and addition of any desired trim completes the model.

Warp tips upward evenly and hand-glide gently. Add clay to nose or tail if necessary. This model has not the slow speed stability of a conventional type, but once adjusted and airborne it will surprise you with its flat, fast glide.

Model Flight Log

By HAROLD STEVENSON


SPEED LOG

A.M.A. LICENSE NO. _____ DESIGNED BY _____ DATE COMPLETED _____ ENGINE _____

KIT ☐ NAME OF PLANE _____ BUILT BY _____ WEIGHT NEW _____ CLASS _____

ORIG. ☐ TYPE OF CONSTRUCTION _____

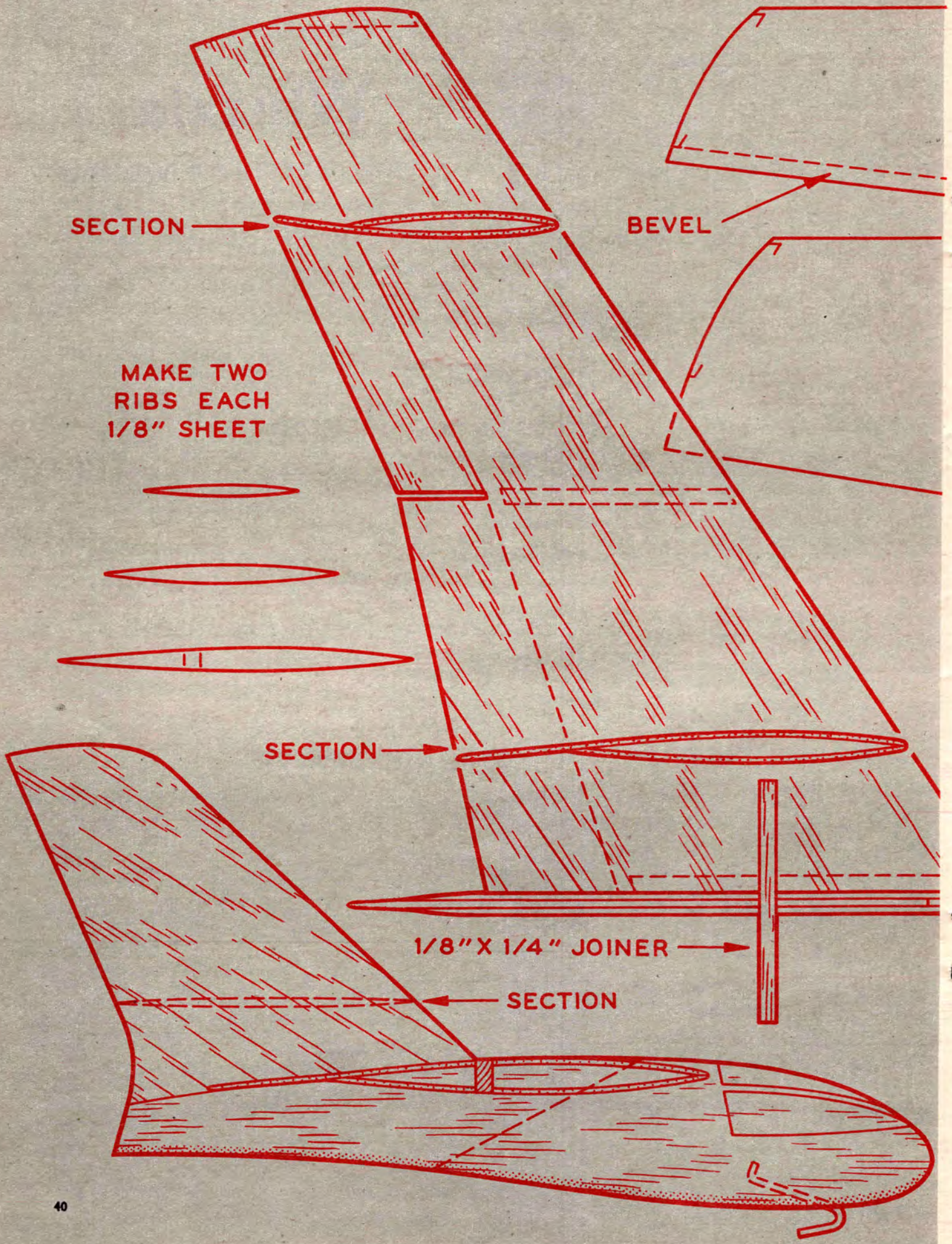
FLIGHT NO.	DATE	PRACTICE OR CONTEST	HUMIDITY and TEMP.	FUEL	PROP DIA.	PROP PITCH	TIME	SPEED M.P.H.	REMARKS

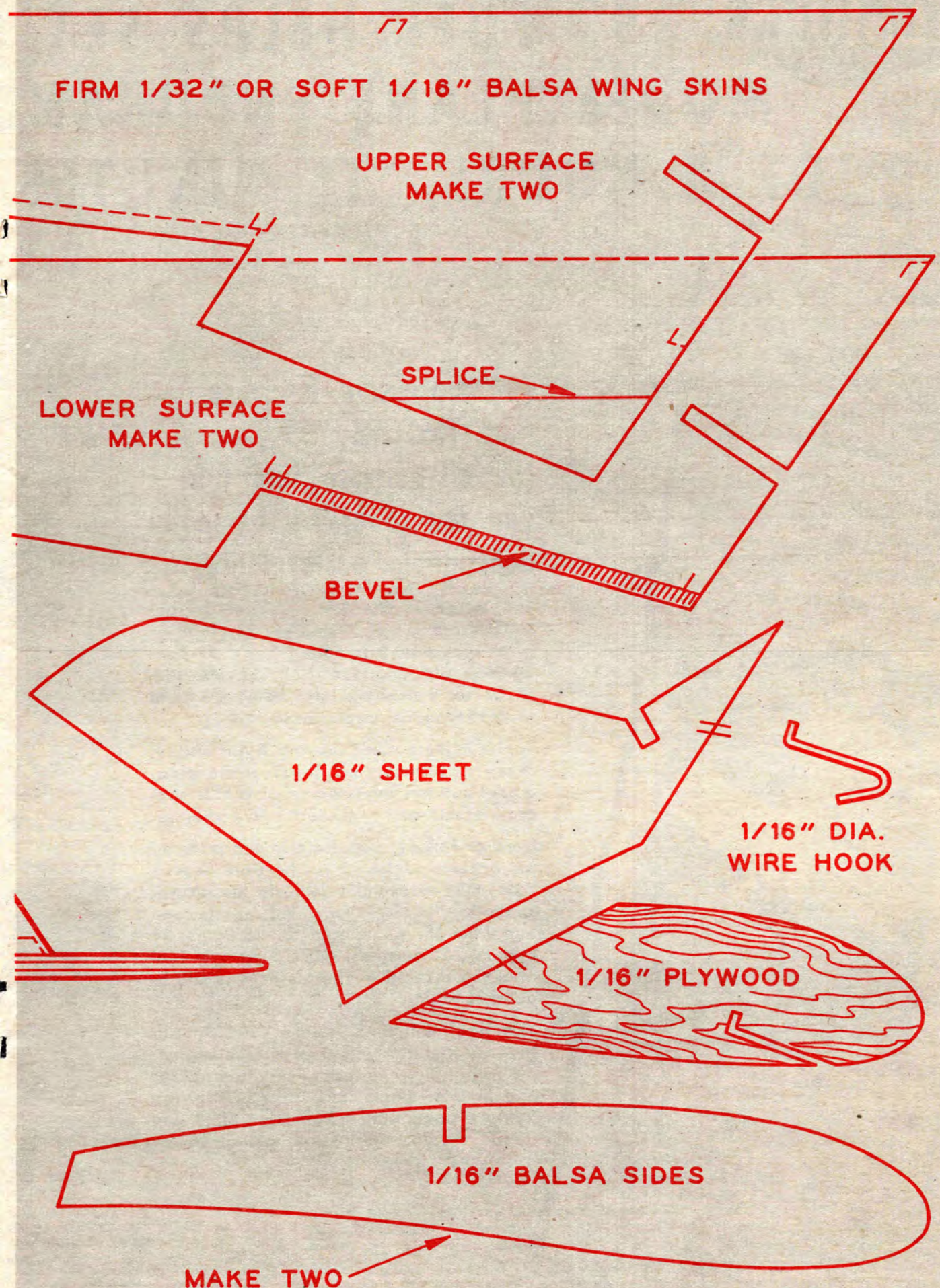
■ Have you ever made a better than average flight in speed only to forget, a few weeks later, what combination of prop, fuel and weather conditions made that particular flight possible?

A sure way to cure this situation is to keep an accurate and complete log of each speed run you fly, whether in or out of competition.

Also, by comparing results of past flights a clearer picture of the flight characteristics of each of your speed jobs may be seen. Make your flight log a part of the standard equipment you take to the field. You'll soon find it pays off in better performance.

The chart shown here has provision for noting all the important information you need for a complete record of each flight. If a loose leaf binder is used, it will be found to be a clean and easy way to refer to your records at the field.


SECTION
BEVEL
MAKE TWO
RIBS EACH
1/8" SHEET
SECTION
1/8" X 1/4" JOINER
SECTION


FIRM 1/32" OR SOFT 1/16" BALSA WING SKINS
UPPER SURFACE
MAKE TWO
SPLICE
LOWER SURFACE
MAKE TWO
BEVEL
1/16" SHEET
1/16" DIA.
WIRE HOOK
1/16" PLYWOOD
1/16" BALSA SIDES
MAKE TWO

TESTORS "39" FUEL HELPS SET N MODEL PLANE ENDURANC OF 8 HOURS, 31 MINUTES,

Model Record

The mechanical-minded young and not-so-young who fly model airplanes in tethered circles have a new mark to fly at. Last week Sherman Holt, 14, of Fayetteville, N.C. kept a model plane in the air for 8 hrs. 31 min. and 50 sec., leaving his nearest competitor more than seven hours behind.

Farm Boy Holt built his first (5¢) model at the age of six. Since then he has been working toward bigger projects. A few weeks ago he had the idea of refueling his latest model through a plastic tube running up the control wire. With help from older fans, he fitted the model with an extra gas tank and rigged the plastic tube.

First trial, which was at night, lasted for 3 hrs. 43 min., but was cut off after a counter-offensive by kept-awake neighbors. A good part of Fayetteville was on hand during Sherman's next flight. Every seven minutes or so, he pumped fresh gasoline into the tank. The flight would have lasted even longer if the extra gas tank had not vibrated loose. If the model had been flying in a straight line, it would have covered 257 air miles.

Fay Ridenour

PILOT HOLT & CRAFT
From the neighbors, a counter-offensive.

AS REPORTED IN TIME MAGAZINE

. . . Impressive evidence that TESTORS "39" is the all-purpose fuel that you can count on for really dependable performance

The article at the left — reprinted from TIME Magazine of September 28, 1953 — gives you the fascinating story of how 14-year old Sherman Holt, Fayetteville, N. C., set a new world's endurance flight record for model airplanes last fall.

For his ingenious engineering, flying ability, resourcefulness, and physical stamina, model-builders everywhere give him congratulations and well-deserved applause.

Here at Testors, we share in the pride of his achievement because he used Testors "39" Fuel — exclusively — in his record-shattering flight! Documented reports read that when the plane landed — 8 hours, 31 minutes, 50 seconds, and 16 pints of fuel after the take-off — the motor was still in good condition!

You, too, will find Testors "39" an all-purpose fuel that will give you the engine-protecting flight performance you want for any kind of stunt, contest, or just-for-fun flying! It's available in half-pints, pints, and quarts at your favorite hobby shop . . .

(Left to right) Here you
mont Airlines at Granni
J. W. Cronise who assis
Sherman Holt at the con

TESTOR CHEMICAL COM

NEW WORLD'S
CE FLIGHT RECORD
S, 50 SECONDS...

ere you see record-holder Sherman Holt, his official time-keeper from Pied-
t Grannis Field, Fayetteville, N. C. where the flight took place, and co-pilot
ho assisted Sherman during the long grind. (Inset above) Camera study of
t the control lines.

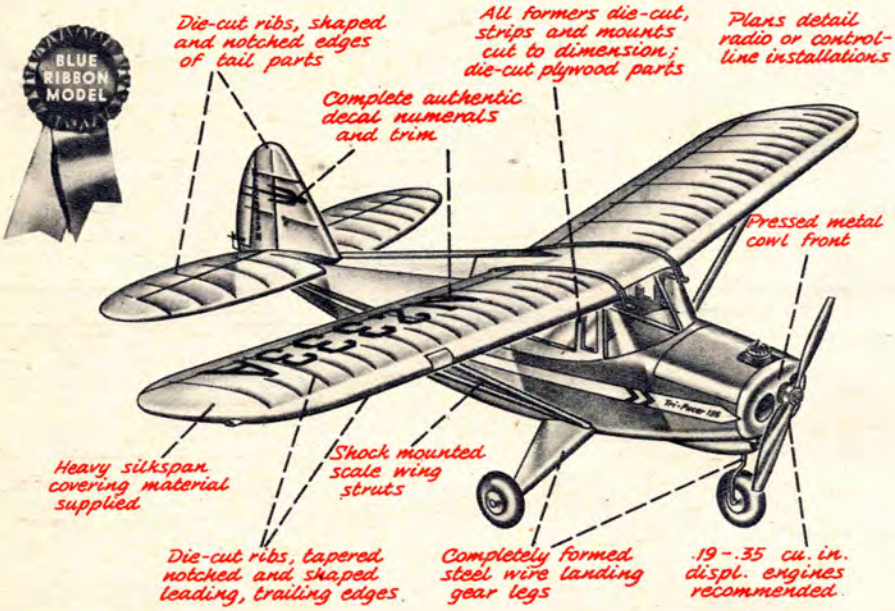
OMPANY • ROCKFORD, ILLINOIS

Sterling Tri-Pacer

Piper model designed for radio work

■ Continuing their long history of producing accurate scale kits, Sterling Models (Philadelphia, Pa.) has come up with a Piper Tri-Pacer designed especially for radio control; it is also usable, of course, for free flight or even control line flying. Developed from factory plans furnished by Piper, the model is extremely lifelike; it is a good-sized plane, with 59" span, and is intended for .15 to .35 engines.

The fuselage has a completely built-up framework, made by constructing two identical sides, then joining them with formers and cross pieces. The side assemblies are entirely of balsa, but a husky "keel" piece of ⅛" hard plywood runs from the nose to the rear of the cabin, on the very bottom of the fuselage. Several of the bulkheads at the nose, and the window area of the cabin sides are also of this plywood. The hardwood motor bearers run through four bulkheads; while the engine is shown upright on the plans (the cylinder of a K&B .19 will extend about 1" above the cowl top) an experienced builder could lay it on its side for even greater scale effect. After the basic framework is completed the entire fuselage is sheet covered.


BLUE RIBBON MODEL
Die-cut ribs, shaped and notched edges of tail parts
All formers die-cut, strips and mounts cut to dimension; die-cut plywood parts
Plans detail radio or control-line installations
Complete authentic decal numerals and trim
Pressed metal cowl front
Heavy silkspan covering material supplied
Shock mounted scale wing struts
Die-cut ribs, tapered, notched and shaped leading, trailing edges
Completely formed steel wire landing gear legs
.19-.35 cu. in. displ. engines recommended

A pressed metal cowl affords an exact scale nose. It is removable, to allow access to the engine.

A flat bottom airfoil is used for the wing and the shaped leading edge slants toward the rear. Trailing edge is shaped and notched, and all ribs are die-cut, as are the curved tip pieces. V struts are attached with wire clips and snap fasteners so they can easily pop loose in a bad landing.

Both the symmetrical stab and rudder are built up from die-cut ribs and edges, and notched spars.

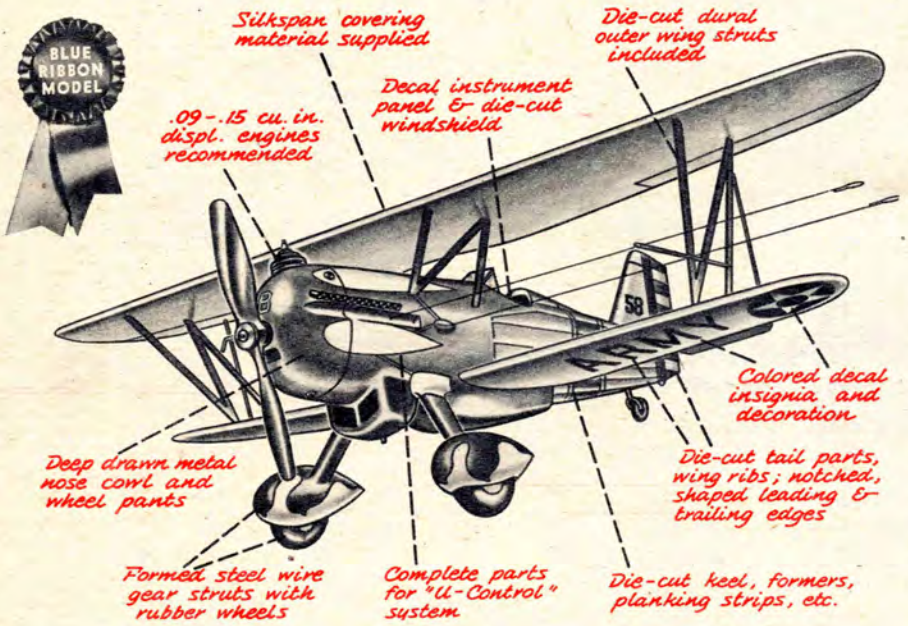
A clear area of about 10"x6"x6" in the fuselage takes radio equipment; there is considerable space in the nose area for batteries. As with all Sterling kits, the plans are exceptionally detailed, with full-sized fuselage side view, and full-sized wing and tail half drawings; exploded views, sketches and photos are further aids to the builder. Heavy acetate sheet for windows and windshield, and paper covering are also in the kit.

Berkeley P-6E

Curtiss Hawk biplane is slick scale C/L'er

■ This control line model of the Curtiss P-6E, last of the famous Hawk series, has a span of 24" and is designed to carry engines from .09 to .15. The ¾" scale plane is produced by Berkeley Models Inc. (West Hempstead, N. Y.) and sells for $4.95. The model was designed by Don McGovern and Bill Effinger, and is an exact copy of the well-known fighter.

The fuselage is built up by attaching half-formers to a keel piece that runs the entire length of the model. The keel is notched for these formers, and is cut out for the lower wing and for the control mechanism. The fuselage top, back to and including the cockpit opening, is a single balsa block, rounded and hollowed out. A similar but shorter block forms the front under shape of the fuselage. Fuselage sides from cockpit to tail are finished with paper over stringers, and the turtle-deck and underside are of balsa sheet. Two plywood formers make strong attachment points for the single wire landing gear and the engine.


BLUE RIBBON MODEL
Silkspan covering material supplied
Die-cut dural outer wing struts included
Decal instrument panel & die-cut windshield
.09-.15 cu. in. displ. engines recommended
Colored decal insignia and decoration
Deep drawn metal nose cowl and wheel pants
Die-cut tail parts, wing ribs; notched, shaped leading & trailing edges
Formed steel wire gear struts with rubber wheels
Complete parts for "U-Control" system
Die-cut keel, formers, planking strips, etc.

Landing gear wire is ready shaped, and wheels are 1⅜" diameter rubber, with eyelet bearings. Wheel pants are in two halves, which must be soldered together after the wheels are installed; the pants are also soldered to the landing gear wire. There is a tiny ½" rubber tail wheel.

Tail surfaces are all sheet balsa, with elevators fastened to the stab by light sheet metal hinges. All parts for the Berkeley Autotrol control system are included in the kit, and the plans have full details on setting it up.

Upper and lower wings are of similar construction, with notched and shaped leading and trailing edges, and die-cut ribs. Both wings are furnished with double ribs where the struts fit. Struts are stamped out of sheet aluminum in "N" shape, those for the centersection being attached to the balsa cowling.

Plans show installation of Wasp .049, Atwood .051 and Cub .14 engines; there is a stamped metal nose piece that must be cut out to fit the particular engine used.

The large and exceptionally complete plans show full-sized views of every part of the plane, with many cross-sections, and assembly views. Three sheets of decals are included.

Gould Runabout

Fiberglass hull is completely finished

■ Designed for use with either electric or glow engine power, the Runabout kit produced by Gould Engineering and Sales Co. (Leominster, Mass.) is a very simple assembly job, and when finished, the builder will have a boat that is practically indestructible. The kit is made for either inboard or outboard motors; in the former case the transom and upper deck are cut out so that the electric outboard motor will fit in neatly. Inboard installations are made in the usual manner, with the engine mounted on wooden bearers.

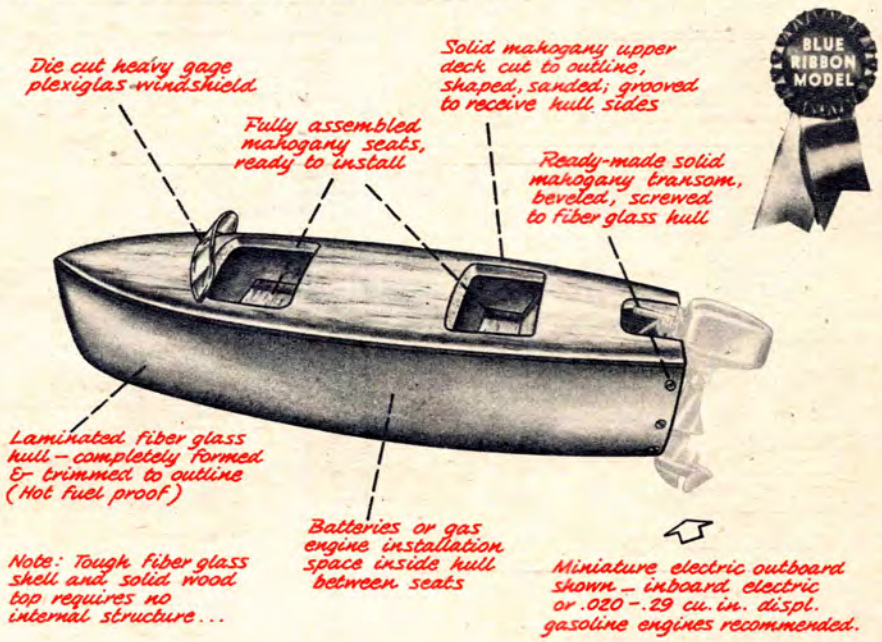
This boat is 16″ long, has a beam of 6½″, and the assembled hull, less drive components, weighs just over a pound.

Main hull piece of the Runabout is of moulded fiberglass, with a very smooth dark outer surface. Wall thickness is about 1/20″. The first assembly step is to attach the transom to the open end at the stern of the fiberglass moulding, which has been left open for this purpose. The transom is of mahogany, about ⅜″ thick; it may be installed by simply cementing it, but the instructions advise that small flat-head brass screws be used for the purpose. The screws are furnished. Holes are to be drilled in the fiberglass for these screws and model cement assures that the joint will be watertight.

Kit includes mahogany seats which are to be fastened to the underside of the deck, where they enhance the appearance of the boat and act as strengthening members. Actually, more strength here is hardly needed, for the deck is a single piece of ⅝″ mahogany, very rigid by itself. It is fully shaped, has the cockpit openings cut out, and a groove around the outer edge, which accurately fits over the top of the fiberglass moulding.

Powerplant installation should be made before the deck is fastened in place. The boat will handle glow engines from .02 up to .29; the drawing shows a Cub .049 in place. Propeller must be chosen to suit the engine used, of course.

Since so much of the work has already been done, the instruction sheet is very simple, and assembly is limited to a couple of steps. A cross-section view shows how the engine, drive shaft and prop go into place.


BLUE RIBBON MODEL
Die cut heavy gage plexiglas windshield
Solid mahogany upper deck cut to outline, shaped, sanded; grooved to receive hull sides
Fully assembled mahogany seats, ready to install
Ready-made solid mahogany transom, beveled, screwed to fiber glass hull
Laminated fiber glass hull – completely formed & trimmed to outline (Hot fuel proof)
Batteries or gas engine installation space inside hull between seats
Note: Tough fiber glass shell and solid wood top requires no internal structure...
Miniature electric outboard shown – inboard electric or .020 – .29 cu. in. displ. gasoline engines recommended.

Merco "48"

Famous Patton tank is modeled by Mercury

■ Named after the illustrious World War II tank commander, Gen. George Patton, this model is a faithful copy of the real thing, having been designed—as are the other tank models in the Merco line—from U. S. Army Ordnance information. A product of Mercury Model Airplane Co. (Brooklyn, N. Y.) the Patton 48 is one of the six scale tanks offered by this concern, all of which sell for $2.95 in kit form. There are four U. S. designs, plus the German "Tiger" and the Russian "Stalin." All are scaled 1″=2¼′.

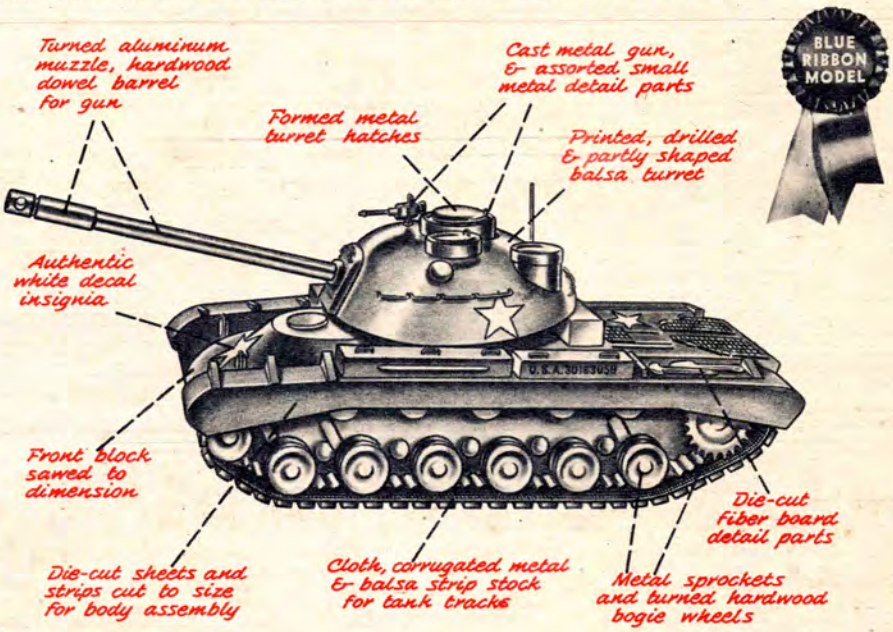
The hull or main body of the tank is built up by assembling two quarter-inch-thick side pieces, and front end and rear end blocks. The sides are die-cut and the blocks are almost completely shaped. Fenders and mudshields over the tracks are built up from ⅛″ balsa sheet. The hull upper surface, or deck, is formed of two blocks of balsa, the forward one being ½″ thick and provided with a hole for the dowel upon which the turret swivels. A ⅜″ block goes behind this and carries ventilators and other small details.

Both tracks of the big tank travel over six bogies which are faithfully duplicated by turned hardwood replicas by Merco. There are also five hardwood return rollers for the upper surface of the tracks. The latter are represented by strips of corrugated metal, over which are cemented strips of cloth tape; track shoes are of 3/32″x3/16″ balsa strip, the pieces being cemented crossways upon the cloth.

A balsa block from which the turret is made is partially shaped, but requires a bit of trimming on the edges. It is bored for the gun dowel, swivel dowel, and for a ¾″ dia. dowel which forms part of a hatch. The gun is ¼″ dowel about 5″ long, and there is a turned metal fitting in the kit to represent the enlarged gun muzzle.

Small metal parts include a cast machine gun, hatch cover, gears for the track drive, cast headlights, and other such parts. A piece of metal screening forms realistic ventilators for the engine compartment. A sheet of heavy cardboard is die-cut to produce shovel, pickaxe, and various small fittings.

The plans are full size, and include a photo of the completed model.


BLUE RIBBON MODEL
Turned aluminum muzzle, hardwood dowel barrel for gun
Cast metal gun, & assorted small metal detail parts
Formed metal turret hatches
Printed, drilled & partly shaped balsa turret
Authentic white decal insignia
Front block sawed to dimension
Die-cut sheets and strips cut to size for body assembly
Cloth, corrugated metal & balsa strip stock for tank tracks
Metal sprockets and turned hardwood bogie wheels
Die-cut fiber board detail parts

MODEL MATTERS

"Genuine flying saucer" is description Bill McCreary gives this free flight craft. All working parts inside; flies with no assistance. Ship is two feet in diameter and 4 inches thick at mid-section. Looks like a modern lamp-shade, or would you say a lady's hat?

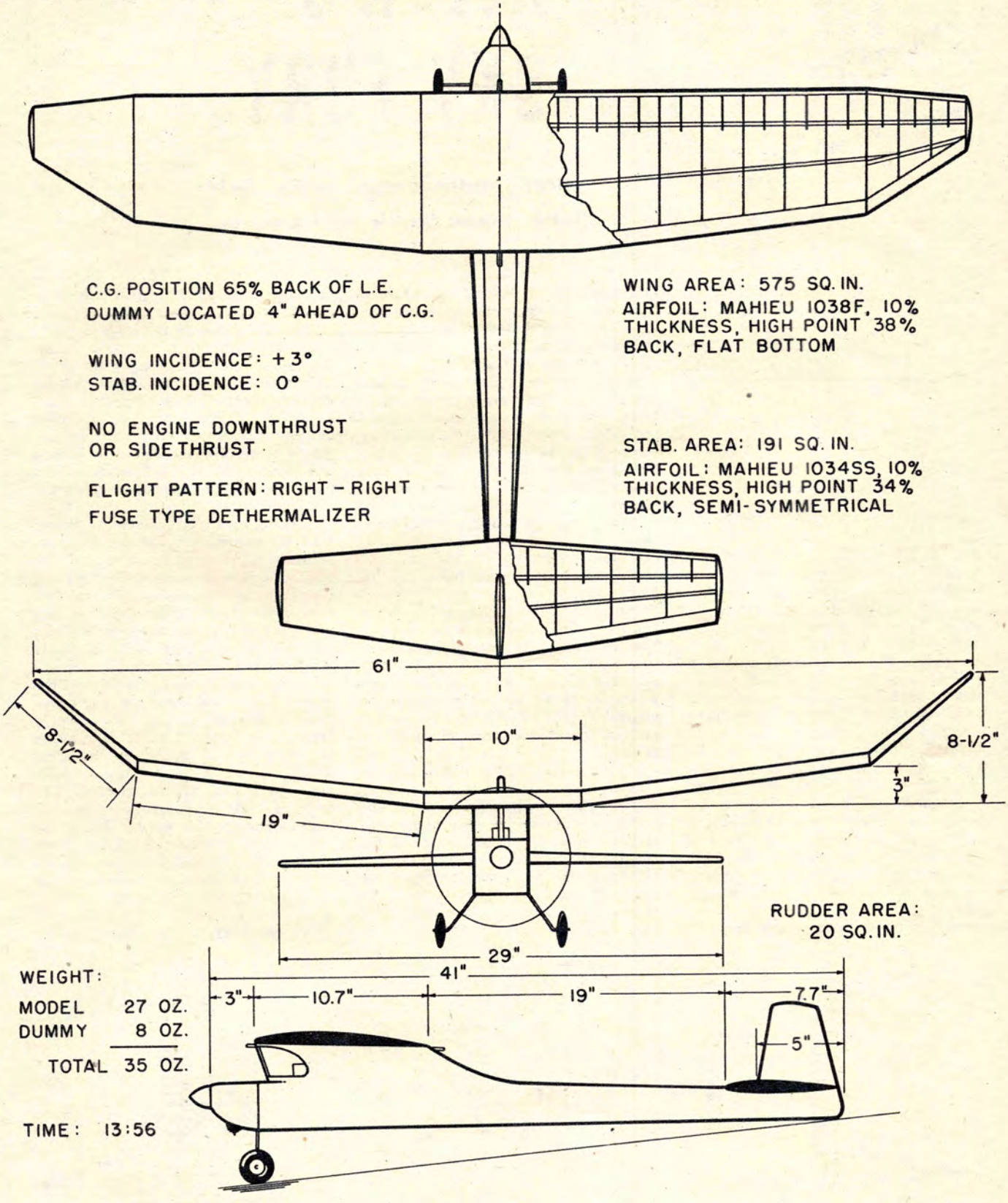
"A very easy model to build as well as fly," is what Ed Breland of WAML, Laurel, Miss., says of Liberty Bell R/C model. The powerplant is Wasp.

Model Airplane Club of the David Starr Jordan Junior High School, Palo Alto, Calif. Teacher Guy Cochran, sponsor; Hugh Coleman, pres.

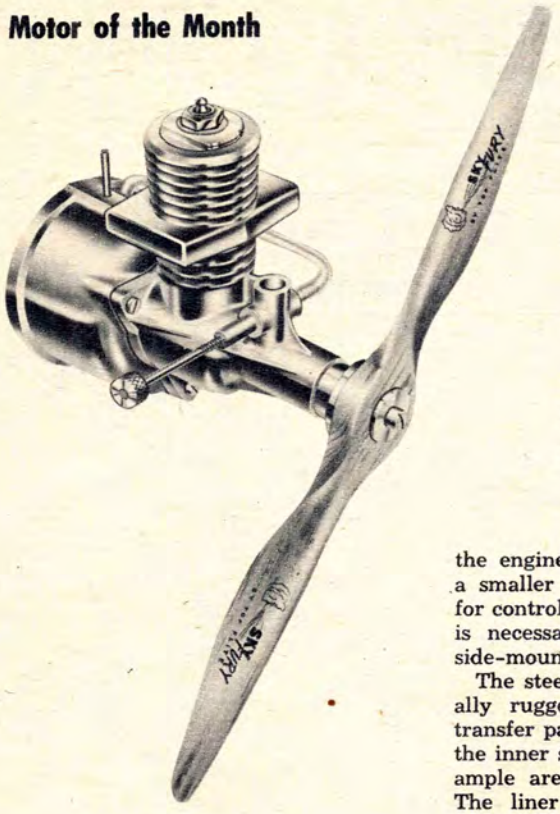
Navyman James Byrne (left) put in more than 1,000 hours on this P2V Neptune solid scale model while stationed at Port Lyautey, Africa.

Twice-size Clough flying saucer made by Charles Hand of Alabama and a model friend. Cub .074 on 7/3 prop. Has gone O.O.S. on a thermal.

Mahieu's National PAA-Load A-B Winner



One of the remarkable features of Lew Mahieu's airplanes is that so many modelers have been able to duplicate his designs with outstanding success. It's one thing to develop a new model which you can build and fly to contest victory, but it's quite another and more difficult job to come up with something that can be duplicated to win by just any enthusiast. Carl Goldberg has the knack, also Henry Struck, Sal Taibi, Paul Gilliam, Frank Ehling—to name a few of the relatively small band. First his Zeeks, now his Kiwis have brought fame to Lew. Here is his revised Kiwi for payload work.



ALLYN'S SKY FURY

Plastic outfit enters motor field with a remarkable Half-A engine

■ The Allyn Sales Co., Inc., of Los Angeles, Calif., known for its very beautiful and detailed plastic airplane kits and "Old West" series enters the model engine field with their dramatically named "Sky Fury." This Half-A .049 cu. in. displacement engine is well designed from both a performance and production standpoint and compares very favorably with the majority of engines in its class.

The Sky Fury incorporates about the largest single aluminum alloy casting of any Half-A. The crankcase, exhaust stacks, and cylinder including the fins are cast as a single unit. Radial motor mounts are provided at the rear of the crankcase. The die-cast free flight fuel tank and crankcase cover combination is held in place by three machine screws which pass through it. These same machine screws are used to mount the engine to the firewall. Included is a smaller crankcase cover to be used for control line work when a stunt tank is necessary or when you invert or side-mount the engine.

The steel cylinder liner is exceptionally rugged and employs four large transfer passages evenly spaced around the inner surface. Two exhaust ports of ample area are milled into the liner. The liner fits the aluminum casting snugly but is easily removed or replaced by hand pressure alone. The cylinder head is a round slug machined from solid aluminum stock, threaded externally to screw into the main cylinder casting and internally for the glow-plug.

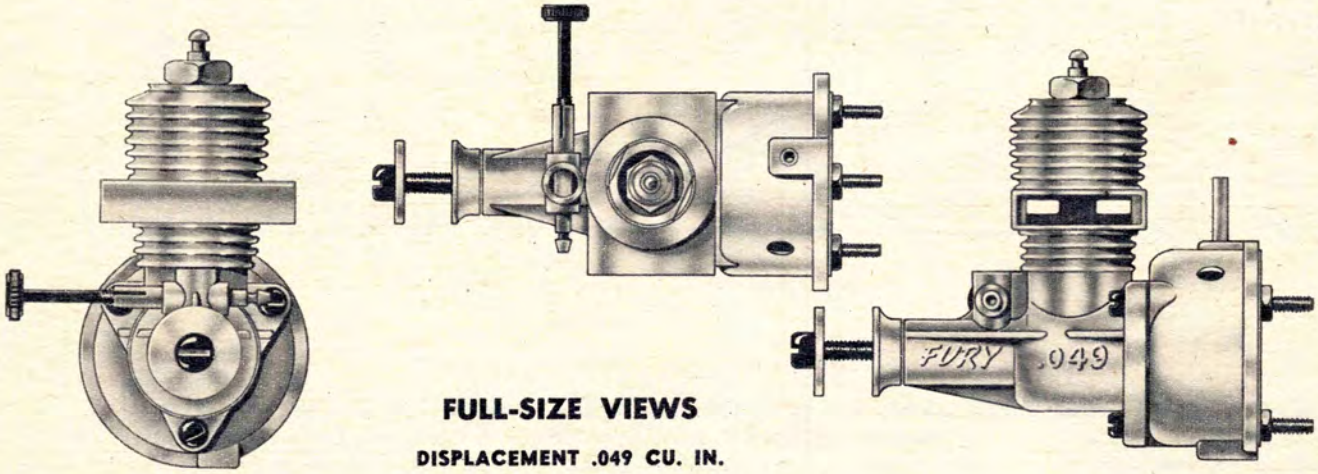
The steel crankshaft is machined in one piece and is hollow in its entirety. The front end is tapered to fit the friction type drive washer. It is internally threaded to receive a machine screw which holds the propeller in place, a method which seems to be gaining favor with manufacturers of small engines.

Friction type drive washers have proved very reliable in the past on much larger engines, but due to the decided difference in materials used and the fairly sharp front edge of the crankshaft taper on the Sky Fury, it is recommended that the propeller be tightened sufficiently to hold, but don't over-do it. Excessive tightening might push the drive washer rearward enough to cause it to bind against the main casting.

The steel piston is flat topped, hardened and ground to a good finish. The aluminum connecting rod, amply strong, is the ball and socket variety. This is another good design feature in that it eliminates the loss of power usually encountered when wristpins begin to wear. The needle valve is long and easy to adjust. No "floating" of the needle valve was encountered during the running test.

Running tests were made with Power Mist Hi Thrust fuel and the 6/3 propeller as supplied with the engine. The starting instructions were followed and found to be completely correct. Are you of the opinion that rpm readings prove not much more than the engine's ability to stay together at high speed? We remember a good many years ago testing a Mighty Atom. The size of the propeller was cut down on successive runs until the engine finally seized after revving over 20,000. The propeller at this stage was of such minute proportions that it never would have gotten a model off the ground. The point is that rpm alone does not fly models. Rather, the answer lies in the proper propeller size and pitch for a given model. Getting the most revs out of an engine does not necessarily go hand in hand with getting the most out of a model.

Our Sky Fury (*Continued on page* 74)



FULL-SIZE VIEWS

DISPLACEMENT .049 CU. IN.

RADIO CONTROL MODELS

XRCS-1

■ This ship is the result of over two years of research and work. Being primarily a control-line speed-flyer, I wanted to keep my ship small with a minimum of wing area, so I started out with first things first: a gear box for the counter rotating props. This was a must, as the torque created by a single prop would be too great in a speed model. A friend gave me a set of discarded Navy gears, which came from the fire control unit on a destroyer. They were helically cut, high-point bevel gears, perfect for my purpose. There is very little drag in the gear box, and I seem to get as many rpms out of two 9/6 props as I used to get from one 9/10 in control line flying.

The engine was easy. I had one old McCoy .60, Series 18, on the shelf, and, with the addition of the regular McCoy variable speed carburetor, I had an ideal set-up: counter rotating propellers with a motor speed control. I used glow plug ignition.

Next came the radio, which, I decided, had to have 5 channels. I had a Rockwood 3-channel with advance relays, but the relays, although small and light, were too sensitive for dependable performance. So the radio was rebuilt with 5 Sigma 4F relays. These relays are ideal for performance, but when 5 of them were installed in one unit, it was just too heavy. Next I tried 5 Potter and Bromfield 8000 ohm relays. These were fair, but they took so much juice the contactors on the selector unit would arc and get pitted with a resulting loss of control. The final set-up was made with 5 Kerman relays; with these relays I found the right balance between weight and dependability. The radio and servos are mounted in one unit.

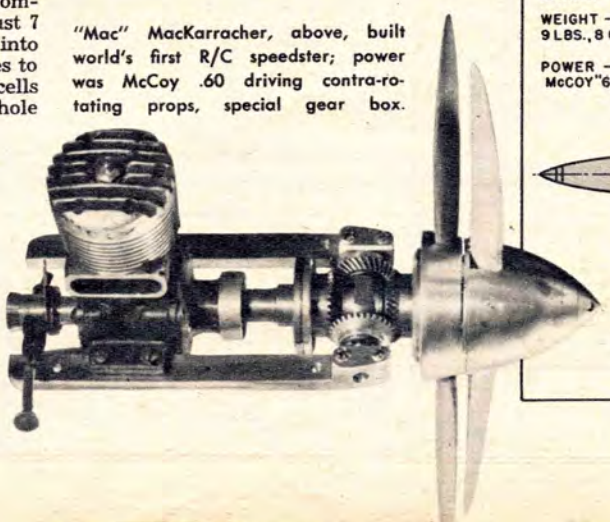
I made a Dural frame and mounted the motor servo, radio, elevator and rudder servos in that order; it makes a very compact and accessible unit. There are just 7 wires coming out of it to be plugged into the ship: A and B batteries and 3 wires to the servo battery which has 8 pencells wired to give 6 volts each way. The whole unit is removable in one piece. The motor is controlled by a piece of piano wire run through aluminum tubing, from the servo to the carburetor. The servo has a low, medium and high position. All the servos were made with English REV electric motors and a gear train, from a toy automobile, which has a ratio of about 300 to 1. This affords ample power, and the speed, with 6 volts, is just about right.

I wanted a ship just big enough to house all the component parts and nothing more. So I made the motor mounts of oak and installed them in the first bulkhead, or firewall, leaving 4 inches sticking through the rear of the bulkhead. Next came a piece of ⅛" plywood, 5 inches wide and 48 inches long. This was glued to the bottom of the mounts back of the firewall. Then, the fuel tank was built. It was made extra large. It is exactly the size of the fuselage below the motor mounts and between #1 and #2 bulkheads. The A battery is mounted horizontally between the motor mounts, with the 67½ volt B battery mounted in a well just behind. Then I made a battery box, from plywood, for the 8 pencells to operate the servos. The radio and servo unit was mounted back of the battery box, leaving only enough room for sponge-rubber shock mounts.

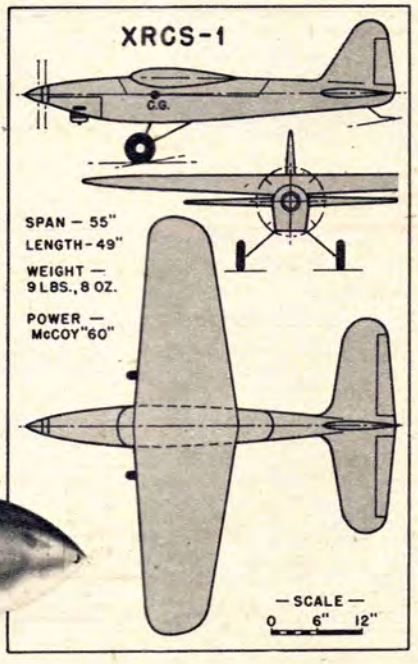
When all this was done the outline of the ship was drawn on the plywood, and it was cut to shape. The sides and bottom of the model are made from ⅛" balsa sheet. They extend from the firewall to within 6 inches of the back of the fuselage; the other 6 inches are a hollowed-out block. The tail surfaces are built up from ribs and sheet covering, covered with silk. The airfoil in the stabilizer and rudder is fully symmetrical with the movable sections inserted back into the stationary parts.

The vertical fin and stabilizer are rather large, but this was for a very good reason; on take-off, a large fin will keep the ship headed into the wind. In other words, it acts like a weather vane. Another must for good take-offs is the location of the landing gear; the center of the wheels should be about 2 inches ahead of the center of gravity. No more than 2 inches, however, as a gear set too far ahead makes a ship very wild on the ground.

The wing has a span of 55 inches, a root chord of 14 inches with a depth of 2¾ inches, and a tip chord of 8 inches with round tips added. The airfoil section is fully symmetrical. No dihedral was used and the top surface of the wing is perfectly flat with all the taper built into the bottom. The wing is built extra heavy, as I did not know how much stress it would have to stand. The wing platform is removable, so as to (*Continued on page* 67)



"Mac" MacKarracher, above, built world's first R/C speedster; power was McCoy .60 driving contra-rotating props, special gear box.



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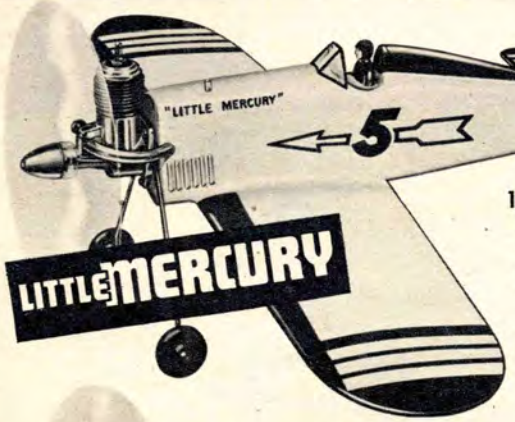

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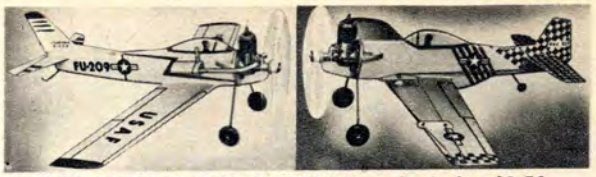

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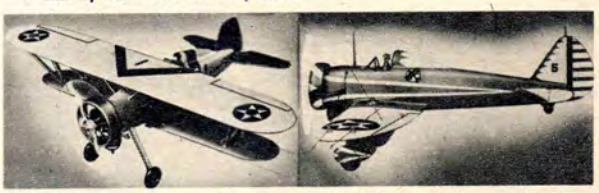

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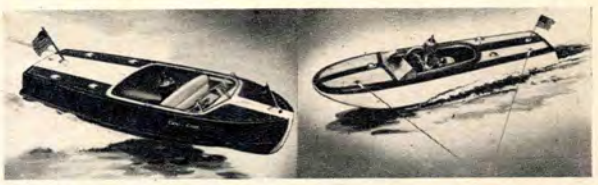

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Primer on Power Loading

Having trouble tuning up that transmitter? Then you're sure to welcome this down-to-earth how-to-do-it dope

■ Nope—we are not talking about the lead or old booster batteries you pile in your PAA-Load planes! The loading referred to here concerns R/C transmitters; a transmitter is said to be properly loaded when some circuit is coupled to the plate coil to take out the optimum amount of RF power. You can overload a transmitter—it will then usually stop oscillating—or underload it, in which case you don't get the amount of signal out into the air that you should.

And there are still other penalties to improper loading; too much load can very easily ruin the tube, and will run down the B batteries very rapidly. If the circuit is not loaded enough, you can ruin your crystal. So you see, it pays in many ways to know the rudiments of transmitter loading and how it is accomplished.

First, let's see what loading is. You know that a flashlight cell has a certain amount of power in it; if you hook too heavy a

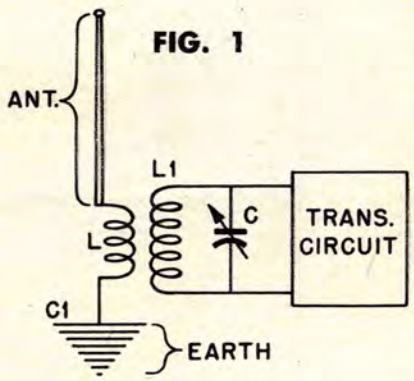

FIG. 1

load to it—a glow plug, for example—it will simply refuse to work. You can consider the tube of your transmitter as a battery, too, but this one does not produce direct current like your dry cell—it puts out radio frequency power, or RF. In order to do this, the tube is made to "oscillate," by connection to certain circuit elements, such as the crystal and tuned plate circuit. If you overload it, it too refuses to work; it stops oscillating, and the plate current goes up much higher than the tube can handle. If you do not load it enough, the tube (if it is a triode) wil ıot be harmed; if it is a pentode, though, the screen grid current will rise to overload proportions. Also, the RF that is circulating in the circuit builds up to a high value in the crystal—and there goes your costly "rock"!

O.K., we'll agree that the transmitter should be loaded to the correct value; what is this value and how do we reach it? If you have a commercial transmitter, or make one from a kit, the instructions will undoubtedly give an operating value for the current. Make sure that you do not exceed this value, and if the current goes higher, turn the rig off till you can collect your composure and find out why.

If you are using a homemade transmitter, better check with someone who owns a well-known make, which uses the same tube and B battery voltage as yours, and do not exceed his current values. As a very rough guide, the common battery transmitter tubes such as 1S4, 3S4, 3V4 should not be used at higher plate current than 12 ma. The 3A4 can go up to about 17 ma., as can the 3D6. If the tubes are used as triodes (with screen grid hooked to plate), you can run the current up another 20%. The 3A5 will stand 15 ma. per section, or a total of 30 ma. for the tube. Heater type tubes that work on 6 V. will generally take quite a lot more plate current safely.

Now, what about the "how" of loading? Remember that the tube is an "RF battery"—it will produce a lot of RF power; you have to get it out and into the air. This is done simply by coupling an output circuit to the tube, tuned to the same frequency. All transmitter antenna systems must be tuned, to operate correctly. You can't consider the *antenna* simply as "that rod you attach to the top of transmitter case"; it is this rod, *plus* the coupling coil, the antenna tuning condenser, if any, and the capacity between the transmitter case and ground. Also to be added in here is the capacity between the key lead and ground—and you yourself are involved in this. That is why the meter may wiggle a bit as you move the key lead.

The simplest coupling systems utilize just the antenna rod, and a coupling coil, as in Fig. 1. Because the antenna is cut to a carefully chosen length, it will be tuned (very broadly to be sure) to the transmitter frequency. For 27¼ mc., we use an antenna about 9½' long; this is known as a "quarter wave antenna," because it is about one quarter as long as the frequency (27¼ is roughly 11 meters, or 37 feet). Some transmitters, especially the hand-held jobs, have shorter antennas than this, but they have other tricks incorporated that allow good operation with these un-

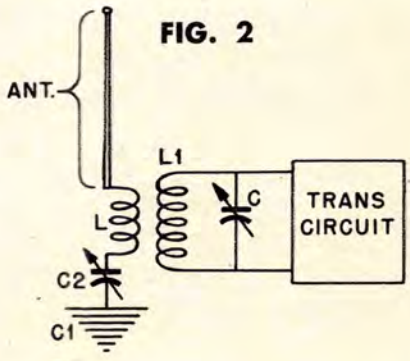

FIG. 2

dersized rods.

As you turn the plates of condenser C (Fig. 1) slowly from minimum capacity (plates open) toward full capacity (plates closed or meshed) the current should drop down to a minimum, then rather suddenly jump up quite high. See Fig. 3. The sudden jump shows the tube has stopped

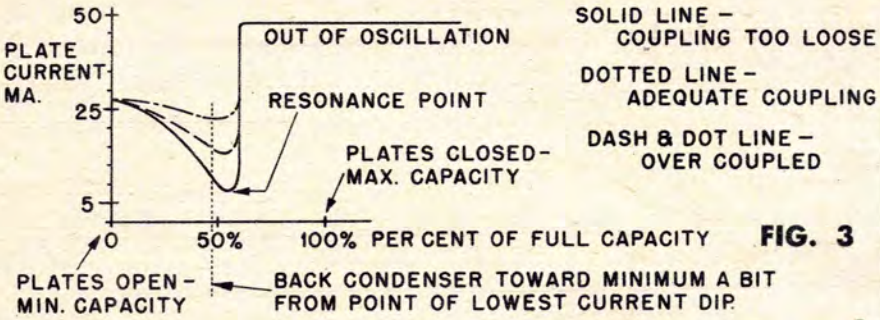

FIG. 3

oscillating—get that condenser back to lower capacity in a hurry! If your transmitter uses a pentode connected 3A4, for example, and the current dips down lower than about 15 ma. (with 135 V. B supply) it's a sign you need closer coupling; in other words, you are not loading the tube enough. So you just shove L closer to L1, and retune C. The current dip should not now be as low. Continue till you get the current up around 15 or 16 ma. If it won't go up this high, then you may have to add a turn or two to the coil L.

Suppose you increase L till it has about half the number of turns of L1 and the current still won't go up to 16 ma? Then you will have to check C1, which is the capacity between the transmitter circuits (including case, key lead, etc.) and actual ground, or earth. Try setting the transmitter on the hood of your car, or on a yard square piece of hardware cloth or even metal. You will doubtless now have to back L away from L1, to get the proper plate current.

And if this *still* fails to raise the plate current—brother, you've got real troubles, and we can't diagnose them from this distance!

Now take the same 3A4 pentode circuit, but with the circuit of Fig. 2. It's the same as Fig. 1, but we have added another condenser, C2. This makes it much easier to properly load the transmitter, especially when it is to be operated on different types of surfaces (and more about *this* a little later). In this case, the ant., L, C2 and C1 are all chosen to add up to approximately the transmitter frequency, or 27¼ mc. Actually, we make L, C2 and C1 all larger than necessary; then in the field, all we have to do is to reduce C2, till the plate current is normal. This is the system that was used in the Mac II transmitter, and is mainly responsible for the exceptional range of this unit. It can be applied to most any other transmitter just as well.

We suggest that the reader refer back to the circuit of the Mac II (and the tuning instructions on A. T. Plan 553) to see just how this tuning system is applied to a representative transmitter.

With a correctly designed system as in Fig. 2, you don't need to have the antenna exactly 9½' long, for good results. It can be as much as a foot shorter, and you can still get pretty good output. It can also be longer, but little or nothing is gained in the way of power output, and the antenna just gets that much more ungainly.

Now a word about those "different types of surfaces" we mentioned a while ago. The reason we have stressed capacity to ground—which is represented by C1 in Figs. 1 and 2—is that the earth plays a vital part in the operation of the quarter wave ant.: without going into the technical reasons why, just take our word that a *half-wave* antenna is the ideal simple radiator.

Sure, we specify a *quarter* wave for our whips—the ground actually acts as the missing quarter. That is why it is so important to have good capacity to ground —C1, you'll remember—in our output circuits.

If you doubt this, just tune up the transmitter sitting on the ground, then raise it up four or five feet on a wooden table. Right! The tuning goes all haywire, and you can't load the transmitter. Ground varies quite a bit in conductivity—and hence in its inability to be capacity-coupled to your transmitter case. That is why it is a good idea to use a large metal case, or to put an extra plate on the bottom of the case as was done on the Mac II. It allows you to get good loading, even if you are over very dry ground. Moist ground, lush grass, metal surfaces like a car hood, all allow easy coupling and loading. On the other hand, very dry ground, sand, concrete runways, and macadam surfaces are poor ones from a loading standpoint.

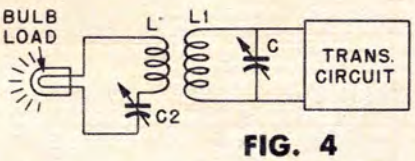

FIG. 4

We have often mentioned the use of a pilot lamp, to show power output, when you are tuning up a transmitter. If one is connected as in Fig. 4, it serves as an ideal means of adjusting the transmitter, when you are first getting it set up. After this, the pilot lamp is of little use; you can connect one in series with the antenna and it might light up, but it will not prove a lot about transmitter output. Also, all the power that is required to light it is just subtracted from that going out in the air to your plane. Hook the bulb as in Fig. 4 for test purposes only—or to impress your friends with mighty power capabilities of your transmitter—but take it entirely out of the circuit for actual radio control operation.

The final word on how your transmitter "puts out" can only be had with a field strength meter. Build one like that in the new Air Trails Model Annual, or purchase one of the many low cost units on the market, and you can quickly check what is coming out of that whip atop your transmitter box. You just can't fool the FSM; if your buddy has a peanut-whistle half watt transmitter, and he can make the FSM read higher at the same distance than you can with your "5 watter" . . . well, just read the foregoing paragraphs once more!

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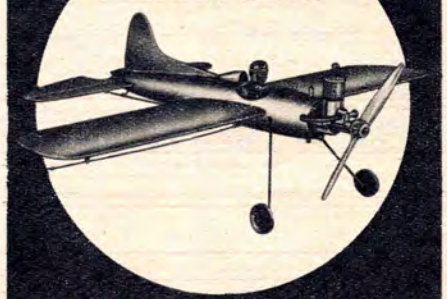
WING DING



The 18" wing is completely air foiled solid selected balsa, 4" wide. All details of this kit are carefully finished, even the wing tips. Prefabricated bell crank mount already riveted through wing. These are examples of the "extras" standard in Master Modelcraft kits.

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R/C MODELS

NEWS AND COMMENT BY HOWARD McENTEE

■ Over the past months we have gathered quite a collection of very useful R/C tricks, sent in by various correspondents. These are too good to keep any longer, so illustrated are some representative ideas.

A—Simple actuator for small planes, sent us by John Worth (Box 9, Hampton, Va.) who had it in a ship at the Nats. The unit is built from a Super-Aerotrol escapement with the entire shaft removed. The rudder pushrod is attached to the end of the regular armature. John advises use of a tall narrow rudder, with plenty of area but small movement. For those with a spare escapement of the older Aerotrol type, **B** shows an adaptation; extension arm is soldered to armature, and used with same type of rudder specified for **A**. This one has been used by Jim Cubbage.

Paul Runge (Box 801, Higginsville, Mo.) has been making all sorts of things from polystyrene rod; a tiny plug is **C**. Made to fit into sub-miniature tube socket, plug is a length of ⅛" dia. poly, with pieces of wire clipped from sub-min tube leads pressed in. No need to drill holes—just heat wire with soldering iron and push against poly. It will soften to let wire in, then close tightly around it. When soldering to wires in plug, push it into the socket; poly will soften again, but wires will not pop out.

D shows two more of Paul's ideas. One is a choke form, the lead wires of which are pressed in from the end. Receiver turning screwdriver has a scrap of sheet steel pushed in the end.

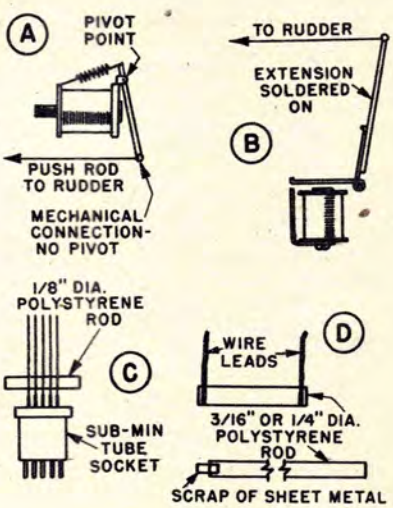
Many modelers use the readily available plastic motors for proportional actuator use, since no machine work is required to adapt them for this purpose. However, we have heard of several such motors "sticking" in such a setup; the plane then spins in, since the armature invariably sticks at one of the limit stops.

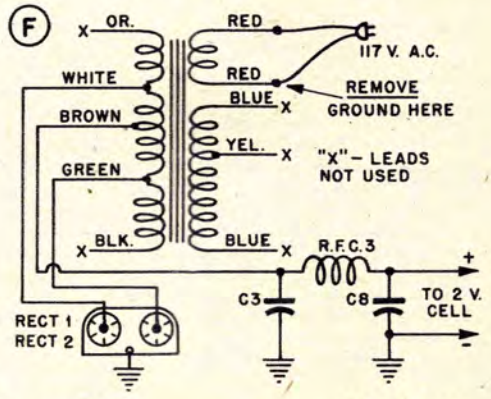
E shows a way to avoid this. It works best with 3-pole armature motors, such as the Hi-Drive, which has the added advantage that the unwanted brushes are easily removed, and the case allows easy access to the commutator. Walt Good, who showed us this one, simply soldered a *very* flexible lead to each of the three tabs on the commutator, with connections as shown. Arrangement gives fairly good pull with 3 V. and about .5 A current drain. Arm. movement about 40 deg.

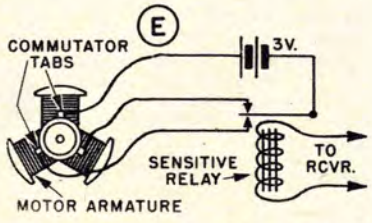
For user of Mac II, **F** shows a good storage cell charger made entirely from parts discarded during rebuilding of the PE-157 unit. T4 and all other parts are marked as they will be found in the original unit; leads marked X should be taped. Ben Hall (6431 Euclid Ave., Hammond, Ind.) says this charger will operate continuously without heating up.

Since we are in the Technical Dept., let's continue with a few more such items. Several readers have written to call our attention to the fact that the circuit of the Babcock receiver on p. 56 of the Oct. '53 issue was "wrong," since we omitted the filament of the second "half 3A5" tube. Well, this is quite correct; the 3A5 is a two-section triode, and it is common practice to show only one filament for such a tube, said filament in this case being indicated for the first "½ 3A5" . . . We hear that some of the Detroit R/C flyers have found the 3E5 tube a direct replacement for the 3V4 in many circuits. 3E5 has two-section filament drawing 25 ma. in each half, or total of 50 ma. when they are paralleled for use on 1.5V. They have found this tube works fine in the Citizen-Ship 27¼ mc. receiver, giving better current change than the original 3V4, and cutting filament drain in half.

Some notes on the Mini-Mac, from Jerry McGeorge (231 Gregory St., Munster, Ind.). Jerry, who has been a great booster for our Simple-Single, likes the Mini-Mac even better, but has had a few problems that might be of interest to other hard tube users. First, he had several bad bypass condensers (the .05 mf. unit), which showed up by producing a steady "plate" (*Continued on page* 62)







AIR TRAILS — BLUE RIBBON MODEL — RADIO CONTROL

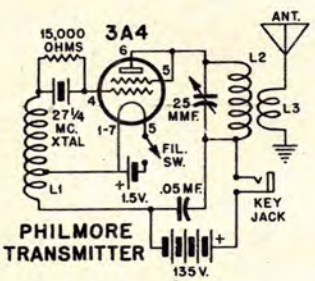
PHILMORE

■ Kit equipment intended for use on Citizen's Radio control frequency of 27.255 mc; F.C.C. blank for station license is included with kit. Transmitter is housed in gray hammertone finished case, with folding handle on top. Antenna held by two ceramic insulators on front panel. Circuit is similar to that of 1952 A.T. Annual transmitter, but a 13,627.5 crystal is utilized. Antenna coupling is fixed, and rather light; antenna is usual quarter-wave style. The single transmitter adjustment is very broad. As with most harmonic crystal oscillator circuits, it is possible to obtain output at higher than crystal frequency, when the tuning condenser is set at minimum; it is wise to follow instruction sheet recommendation to have frequency checked before putting transmitter into use.

There is plenty of room in the case for all batteries, and also room for a meter on the front panel, in case you wish to add one. All necessary holes are drilled in case and panel, as well as in tube bracket.

The key jack is of the closed circuit type; the unit will put out a signal with the key plug out of the jack, and the filament switch on. A O-50 ma. meter may be plugged into the jack to measure plate current.

The kit contains everything needed to finish the transmitter; you even get shaped wood blocks to hold the batteries in position. The antenna is a chrome-plated job that looks like an extra-long auto type. Parts are included for 5 ft. key cable.



PHILMORE TRANSMITTER

The receiver is a standard gas tube unit, with Kurman relay attached to the chassis. Latter comes ready-drilled, is of 1/16" thick linen Bakelite. Tube is inserted in miniature socket, and held to chassis with rubber band. Circuit is intended for use with either RK61 or XFG-1 tubes.

Besides parts for receiver itself, kit includes toggle switch for A circuit, a miniature metal-cased rheostat, and a phono jack and two plugs (one for meter, one for shorting jack).

Wiring is made easy and neat, since chassis comes fitted with ten metal grommets that are used for interconnection, and for battery leads.

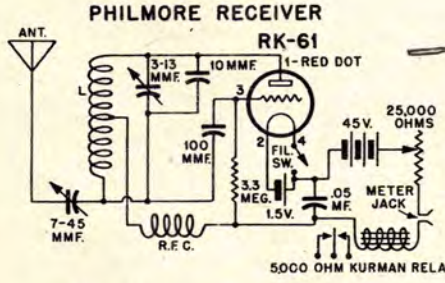
Separate instruction folders for each unit comprise four pages, with written general data, step-by-step assembly, and information on adjustment and operation. The receiver sheet includes several paragraphs on relay adjustment. There are also circuit diagrams, mounting drawings with actual wiring indicated, and in the case of the receiver, a drawing of connections to receiver accessories and escapement circuit.

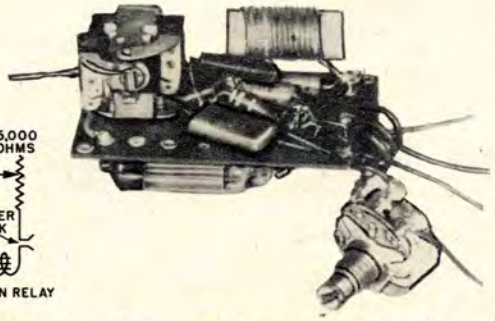
For those who require it, Philmore has available the rugged Super-Aerotrol escapement (Philmore part No. RCEU). There is a separate instruction sheet for the escapement, and another sheet carrying general information on R/C operation. If the kit builder has trouble getting his units to work properly, they may be returned to the Philmore Service Dept. for inspection and repair, provided units are constructed according to instructions. A charge of $3.00 is made for this service, plus cost of any new parts that may be required.

Specifications

Receiver #RC222R. Overall size about 2⅞" x 1⅞" x 1⅝" high. Weight with tube and built-in relay—2¼ oz. On-off switch and rheostat add (*Continued on page* 71)

PHILMORE RECEIVER RK-61





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MODEL X1 in PE157 Case with built-in storage battery, vibrator power supply & btry. charger **37.50**

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Above KIT, complete with tubes, relay & choke **13.95**

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Crystal holder ..... **.15**

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SAVE 10%—Deduct 10% from any of the kit prices when ordering with any escapement.

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PARTS FOR THE MINI-MAC
Small quench coil **$1.25** Bakelite base..... **.25**
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New TUBES Guaranteed				3D6.....$ .80	
RK-61	$3.35	XFG-1	$3.25	3A5.....	1.35
1S4.....	1.25	1V5.....	1.90	3S4.....	.85
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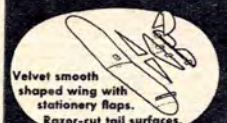
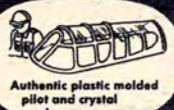


Velvet smooth shaped wing with stationery flaps. Razor-cut tail surfaces.

Completely prefabricated, all parts razor-cut to shape.



Authentic plastic molded pilot and crystal clear canopy.

Beautiful plastic molded colored spinner; and nose cowling.

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MINIATURE SCALE CONTROLINE

The world famous F-51 Mustang fighter is the original Enterprise "EASY-TO-BUILD" miniature scale controline kit. Fellows — you have never seen anything like this model. This wonderful kit is loaded with prefabricated, and fully finished balsa and plastic parts that will enable you to build and really fly the most beautiful scale controline model you have ever seen . . . and it really flys!

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23⅛" wingspan for .099 to .16 engines

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A COMPLETELY PRE-FABRICATED CLASS A FULL STUNT CONTROLINE . . .

A new, larger version of the popular "Zenith" this great new model will amaze all with its ease of construction and remarkable flying and stunting ability. Guaranteed to perform the complete stunt pattern. Especially made for the new O.K. .14 and K & B .15 engines.

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Dope Can

(*Continued from page* 10)

tank aboard the craft.

School clubs reporting in: Aeronauts, Prendergast High School, Drexel-Hill, Pa., Thomas Boylan, moderator; Wing-Dingers, Kennebec, S.D., High School; Sky-Dingers, Redfield, S.D., High School. E. J. Charbonneau started both, is currently advisor to the latter group. . . . Worthington, Minn., Y.M.C.A. has provided meeting space for the W.M.A.C. Maynard Doeden, Bigelow, Minn., is the contact man. First meet in 10 years drew entrants from Iowa, South Dakota, Nebraska and many points in Minnesota. Club's nickname is "Thunderbirds." Construction classes every Friday night. . . . Leo Breen Omenchain, Jr., Box 1064, Fairport Harbor, Ohio, is looking for a pen pal; he builds models and collects data on full size planes. Last year at McChord AFB he had the chance to get inside a Globemaster, F-94 and T-33.

And We Quote. "I would like to know if there is any airplane event held to show only the scale and detail of a model without actually flying the model. I have a P-40 and an SBD Dauntless. The latter has rivet detail and is scaled 1 inch to the foot; the former has a scale motor," Dan Langan, 117 Main St., South Glens Falls, N.Y. That's a mighty good question, Dan. As far as we can tell there is today no contest held nationally for best non-flying scale models. In Cleveland the Community Chest makes awards for such models, but entrants come usually from within a 500-mile radius. Can it be that the day of the super detailed scale model is dead?

"Have a Veco 29 in excellent condition; would like to trade for an Allbon Dart diesel or Spitfire diesel," Fred Klie, Armel, Colo.

International Guild of Aeromodelers. The International Aeronautical Federation (F.A.I.) founded in 1905 to regulate the sport of flying of all kinds and in all sections of private aviation and to lay down rules for the control and certification of aviation records is at present examining proposals to form an International Guild of Aero Modelers.

Already in 45 countries of the world, model aircraft competitions and records are organized according to the rules and regulations drawn up by the Federation and supervised in each country by the national aero club and the air-modeler clubs affiliated with the senior groups.

International competitions and championships under the F.A.I. rules are organized each year in various countries by the aero clubs, but the competitions and championships are still too limited in scope and the world championships have not yet acquired that world wide participation which distinguishes, for example, the world tennis championships.

The factor which is preventing more widespread participation in world model aero championships is lack of funds to cover traveling expenses. To help overcome this drawback the F.A.I. is making an appeal to the aircraft industry and airlines in each country to support their particular national aero club and to take the initiative in establishing a fund which could be used to help the country's air-modeling movement.

Laments the F.A.I.: "On all hands one hears reports of lack of aircraft designers, engineers, draftsmen and so on in the aircraft industries and shortages of air crews in the airlines, yet the effective source from which all these classes of aviation specialists could be recruited is being neglected by the industries and companies who are crying out for personnel.

"One cannot produce skilled men from the raw material in a day nor even in a year, but model aeroplane builders are already part of the way along the road to skill in the art of aviation and they possess the desire and the urge to progress and to succeed.

"These are valuable qualities which should not be allowed to lie fallow or be lost: those whose duty it is to help preserve

them are those who are primarily interested, that is to say, all branches of the aircraft industry and the air transport companies."

—THE DOPESTER

Western

(*Continued from page* 12)

of flubbed, then Everett flubbed, the third Bug did over 4 minutes, so Don McCune got his Kiwi off for over 4 minutes, leaving the Kiwis 38 seconds ahead, and—guess what happened. The Bugs dashed off, got Sal away from the dinner table, which is in itself a feat, took him back to the contest where he arrived with only five minutes remaining. Sal very calmly put his model together, torched off his Torp and proceeded to turn in his best flight of the day for first team place!

One week later the same Vessels Ranch, the Hi Tailers monthly, the same gang only more. FAI jobs were flown like mad. In Class A we turned in flights of 5:41, 5:45 and 4:41, before 9:30, with the same Kiwi for first in A; another Kiwi was second, Sal Taibi flew his B Spacer to first in B. What a contest, or what contests—for the San Valleers were also holding their club contest. Lots of flying.

Can't help but remember "Lucky" Moody and his Yvvic Yob (Civvy Boy spelled backwards). Lucky managed to hang his ship on the telephone wires. Three tomato poles, Lucky's station wagon and handkerchief as well as Casselberry's handkerchief later, the ship was caught by George as it dropped. They borrowed the tomato poles from a farmer, the handkerchiefs tied the poles together, the station wagon was a high platform—real fun. F. L. Swaney was not quite so lucky. He missed out the last part of the contest when his ship hung up and refused to come down. Tom Beall, who had been flying for the past two years, put his Space Bug job almost out of sight on each of his flights for a 3—six total. Tom is one of those guys who really gets in there and flies but seemingly has something go wrong on one flight, so he never wins. At this contest he managed an overrun on his third flight for a six, but came back on his next attempt to stick that ship way up there again, this time on a good run to win easily.

Then Bakersfield, this time no wind, lots of good air, for a day that has more than once made this flying spot famous. It was specially gratifying to see Elmer Achterberg back in action. Elmer two years ago was the one man everyone had to beat if they expected to win a contest. The long lay-off, though, didn't help him too much; he had all kinds of trouble.

Speaking of trouble, Sal Taibi had his. Sal launched his B Spacer after an excellent 5½ minutes on his first, only to have the engine run for about a minute, and after two minutes the ship disappeared directly overhead. Sal didn't worry—six-minute fuse, no wind—so he waited for it to come down. Ten minutes later, still no ship; from all indications Sal might still be waiting, for the ship hasn't been returned.

There seemed to be a lot of crack-ups. We caught one in a spiral glide just in time to keep it from hitting El Piojo. Seconds later Danny Lutz proved that cars aren't as good as they used to be by putting the shaft on his screaming .23 through one. Then a short

"I'm from the C.A.A."

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CONTROL MASTER
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"EXAM FREE"

NATIONALLY ENDORSED AND ACCLAIMED BY MODEL BUILDERS EVERYWHERE . . . .

27.255 MC FREQUENCY TUNED, WIRED, READY TO USE

TRANSMITTER (Pictured) MODEL 27X $29.50

RECEIVER MODEL 27RH-2 $19.95

FIELD STRENGTH METER MODEL F.S3 $14.95

BOB PALMER — Top West Coast model champion, expert designer, flyer of all types of models, and designer of Veco's new Short Circuit R.C. model kit.
"I have finally found the best. All the CONTROL MASTER R.C. units perform so well, that I am convinced that there is no better single channel Radio Control equipment available. And fellows wait till you see the Range this transmitter has."

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"I have thoroughly tested and used all CONTROL MASTER R.C. equipment and find that it is expertly engineered and one of the best single channel R.C. installations available. The reliability and range of the equipment is top notch and I would recommend its use to all Radio Control Flyers."

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"For my R.C. work I am exclusively using Enterprises CONTROL MASTER equipment. I have found it to be the most reliable and effective R.C. equipment that money can buy. I heartily recommend these units to all R.C. enthusiasts."

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while later Elmer Atcherberg put one into the deck, creaming the ship.

All in all, if it is possible to spot a trend it is toward faster climbing ships. Last year it was to floaters. Fran Uyematsu has a 135 square Half-A job that really motates, those A Kiwis with Torp .15's go up in a hurry, the Spacers with .23's move. Funny thing, too, flat bottoms on wings are increasing, more and more builders find out that C/L max doesn't increase nearly so fast with angles and speed on flat bottom airfoils as with undercamber; glides are almost as good, the high altitude paying off for longer flights. One still sees that lazy undercambered glide paying off in a lot of flights. F. L. Swaney rode out one particular low bump to a six max when other ships dropped through.

This guy Tom Beall won Half-A again. Seems like he is going to make up for lost time—that's two in a row. Tosh Matsudi screamed his Zeek up for first in A, "Ole Jack" Oxley won B and Ralph Morgan won C.

Jim Cahill—historian. Man, that guy Cahill can recall more about past contests, especially Wakefield, than anyone we know. Jim took us to task for a recent comment, rather rightly too, for things happened we didn't know happened, way back to 1936 in this case. The letter recalled a rather futile attempt to retain possession of this cup at the Nationals that year.

According to historian Cahill, he got just a little peeved over the attitude of one of the U.S. team members who didn't even show up till 2:30 p.m. at the contest, another guy made an overnight conversion of another ship to be able to fly. This we remember, for it was Tulsa Roy Wriston, a top flyer in those days. Seems like someone decided that Gordon Light should defend his championship, thereby eliminating Jim who had qualified sixth. Gordie hadn't even unpacked his model for a year, so effectively, says Cahill, we had three good team members and England took home the trophy. Actually Al Judge beat out Wriston by some two second average to win, Bob Copeland was 3rd and an upstart by the name of "Everett" was fourth.

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Money was of the essence during Jim's winning venture in France in 1938, but thanks to Frank Zaic he made it back to Indianapolis with 11 cents. Only through the earnest effort of Mrs. O'Brian of Akron was he able even to make the trip. Then came 1939, this one we remember; Jim had had a little difficulty, on his first flight, the Clodhopper II turned tail and planked its fuse on the runway. Hours later the glue dried, Jim made a cautious flight, it was good, he went up to make his 2nd flight, time 2:45 p.m., and was told that this would be his last flight since only one flight could be made after 3 p.m., a rule laid down at the contest which penalized all those who had hard luck and those who waited an hour in line to fly. (Ed. note: this was a real controversial contest since hand launching was permitted even though at that time the rules said R.O.G. This was done with gas models on one day only due to the high wind). On this flight Jim managed an O.O.S. which the timer saw for eight minutes. Dick Korda, who was sweating out this flight, saw it for more than 12 which would have put Jim on the team. The rest is well known to all of us. Korda won with his 29-cent model, so he called it (personally, we have never seen anything of Korda's which was worth anything less than a million dollars).

Came 1948, the hassle came up for real, the upshot being that Korda who had won the last previous contest, and Cahill both made the team by flying. Jim felt that he didn't really have a good model but managed to lose it in the contest. He feels that Roy Chesterton deserved his win for he had the best flying model in the contest. So for the record—the last two winners did not get a free ride.

To continue—Jim says, "The best plane rarely wins, so why should we pretend that because a fellow is lucky one year that his luck will hold the next year? Both Foster and Kneeland have shown they are top notch model builders by going overseas twice. But how about those equally good builders who perhaps by a freak of bad luck have come in second?" He does not believe that their numerical odds should be lessened by giving Foster and Kneeland a free ride.

"Foster had to have luck to get past Bilgri, Cole and Baxter and some of the other consistent Wakefield builders. Also, although he had a top-notch ship in England, he was lucky not to get a down-draft on any flight. In all fairness, Evans and Reich should have been on the last fly-off. Perhaps it would have turned out differently if Hughie O'Donnell had not broken a strand in his motor while winding on his last flight."

Jim says much the same for Kneeland, never disputing for an instant that either of these fellows didn't deserve to win. We all know that they are top modelers, but he feels the luck had to be with them, and that they should be happy to win last year and not expect any additional gifts.

Personally we haven't had a chance to talk to either Dave or Joe, but we can well imagine that they do, beyond a doubt, want to defend their championships. The chance to do so if they are not automatically chosen will be very slim indeed, due to the

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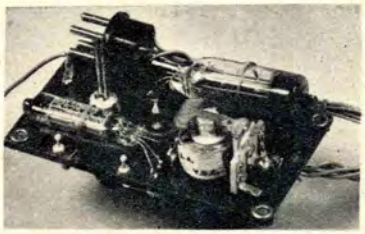

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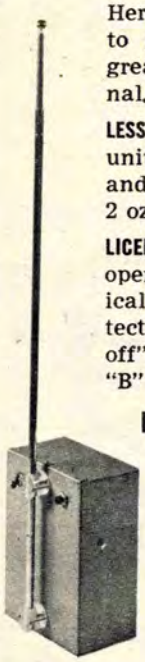

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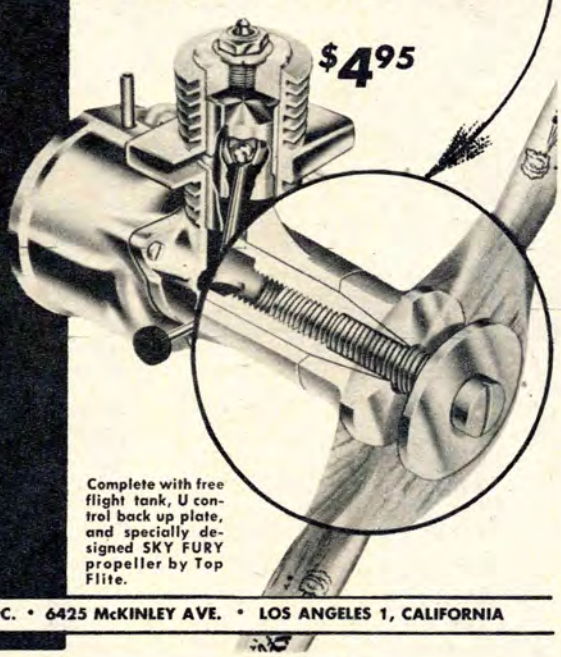
Be sure to see next month's issue for another INSIDE FACT. This is just one important engineering improvement!



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thousand and one obstacles which continually rear their head in front of our models. One thing which must be stipulated, for so it seems, is a definite understanding as a part of our rules—how about it, fellows?

Harry English and James Carpenter, late of the Lubbock Eagles and more recently of the San Valleers, probably have the post office "delta" wing crazy by now. A recent visit to Gilman's found the guys making "delta" envelopes for airmail letters—just bend up the rear corners for rudders and they really fly. The stamps are put on the nose and three twos are better than one six-cent airmail since the extra weight helps balance the first true airmail letter: *the letters themselves fly.*

—DICK EVERETT

R/C News

(*Continued from page* 56)

current, even though the tube filament was off, or the tube out of its socket. This trouble is not confined only to hard tube receivers, incidentally; we have heard of many cases where these condensers have developed leakage in all types of R/C receivers—so they are a component to suspect, if things don't act just right. Jerry had both paper and ceramic disc units go bad in this connection.

The quench coil we used in the Mini-Mac has both primary and secondary wound with "Litz" wire, which has many strands of fine enamelled wire twisted together. It is horrible stuff to work with, as it is very difficult to clean all the tiny wire ends and resolder them. We strongly recommend that builders obtain the quench coil from the suppliers (Essco or Gyro) without the lug disc; the leads will be found a bit long, but *don't* cut them off—just wind them around the coil as we did on the original Mini-Mac, and use the tinned ends the maker provides. There is some evidence that receiver action may suffer, if one or more of the tiny wires in the Litz are not connected. This is being investigated, and we are also trying to locate a *small* quench coil wound with plain solid wire. More dope on this later.

Jerry didn't have the slug-tuned coil form we specified, so wound 25T. of #32 en. wire on an RCA replacement TV "3rd and 4th picture IF transformer," part Number 202L1. He found it worked out fine.

This seems as good a place as any to make a "statement of policy" regarding the many commercial kits for R/C equipment we have had in Air Trails. With the rapid growth of R/C activity, more and more concerns are going into the kit business; while we welcome them as a real help to the R/C builders, it is impossible for us to check the many kits they sell. Occasionally we receive complaints from readers about kits which contained the wrong parts, substitute items (which in some cases were really of higher grade than those we had specified, but were not acceptable to the buyer since they "didn't look the same"), inferior or defective parts and so on. We have reason to believe kit suppliers who advertise in this magazine

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are trying their best to do an honest job, but if any reader gets a kit of a unit that has been described in Air Trails and finds defective parts, or units unlike those in the original, just write us and we will take the matter up directly with the supplier.

A recent letter from George Trammell (1815 26th St., Gulfport, Miss.) seems to indicate that he is going strong again after a rather serious illness early in 1953. Sounds as though George is trying to make up for lost time, judging from all the R/C projects underway; for example, he hopes to put double R.F. channel equipment on the 50 mc. band in a 38" span Cub Coupe, for simultaneous rudder and elevator control. He sends an interesting note on the neon tube proportional pulser we had in the Jan. '54 issue. Seems that Ed Breland built one of these and found that the neutral setting drifted somewhat. He finally discovered this was caused by light hitting the neon bulb, which he had projecting through the panel, as in George's original model. The trouble was cured by slipping the rubber bulb from an eyedropper over the neon tube.

General News Items. We were surprised recently to receive a letter from an R/C enthusiast in Korea. Nope, it was not a G.I., but a student in the Engineering College of Seoul National University. He is Chul Park, and writes that he has tried many R/C circuits; he sent us copies of some of these, including receivers with R/F amplifiers, superhets and so on. He apparently can get all types of miniature battery tubes, but not RK61's or XFG-1's. Chul also sent a picture of the uncovered framework of a fairly large R/C plane of apparently beautiful workmanship. We are sure he would welcome letters from R/Cers in this country; you can reach him at the University at Seoul, c/o Asst. Chong Hall Whang. Incidentally, Chul speaks and writes English.

William P. Gilkey (106 McClelland Ave., Pitman, N.J.) requests us to mention here that a group of R/C flyers are in action every Saturday afternoon and all day Sunday at the old Pitman Airport. They invite anyone from South Jersey or the Philadelphia area to join them; several 27¼ mc. transmitters are usually available. The Pitman airport is located on Tyler's Mill Road, which runs off Route 553, between Barnsboro and Pitman.

The Pacific Radio Control Society is planning an R/C contest for Feb. 21st at the Turlock Municipal Airport, Turlock, Calif. Ray Morgan says he has heard that there will be separate classes for single control and multi-channel flyers. You can get more info from Ray by writing to Ray's Hobby Shop, Box 72, Patterson, Calif.

Speaking of a split in classes, there is much discussion as to how this should be made. We have heard of many schemes, some of which have actually been tried out in contests. For example, we understand that a West Coast contest divided the planes by putting those with only a single sensitive relay in one class, all with more than one such relay in another. A friend of ours has suggested that the simpler class be defined merely as those planes with only a single control surface. While

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35¾" span, ⅞" scale. Length 30½". One-piece moulded, clear plexiglas cockpit enclosure. 2½" scale alum. disk rubber wheels. Body planking full size plans. Uses B or C motor. Set **$5.95**

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A real collector's item. Finely detailed. Set has air wheels, ready cut pans, turned balsa cowl unit, parts printed on balsa. Const. set..... **$4.50**

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Set has scale rubber wheels and all spec. parts, ready cut wing ribs, tail wheel unit and wheel. Const. set..... **$9.95**

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41" span. 1" scale. Rubber driven. Standard set. Wood wheels, balsa front..... **$5.00**
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33½" Span. ½" Scale
Set has two alum. cowls and scale Veco rubber tired wheels. Model can use ½ A motors. Wasp, etc. Set less motor **$7.00**

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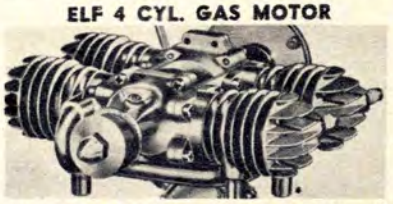

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Cub .074	10 " "	2 " "	9 " "	3 " "
.09's	10 " "	3 " "	10 " "	4 " "
.14's and .15's	11 " "	3 " "	10 " "	4 " "
McCoy .19	11 " "	3 " "	11 " "	4 " "
Cameron .19	12 " "	3 " "	11 " "	4 " "
K&B .19	12 " "	3 " "	11 " "	4 " "
Fox .19	12 " "	3 " "	12 " "	4 " "
K&B .29	12 " "	3 " "	12 " "	4 " "
Fox .29	12 " "	3 " "	12 " "	4 " "
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10 in. dia. 2-3-4 in. pitch—35c ea.
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5" and 6 in. dia.—15c ea. **7 in. dia.—20c ea.**
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The new 10" dia. Plasticote Propellers are now available at 30c ea. in 5 and 6 in. pitch. On all the .29's use a 10-5, on the .32 and .35 a 10-6. Forster 29 and 31, McCoy 29, do very well on the 10-5. The efficiency of the Plasticote propellers run up to 95%, and it may be advantageous to try a 10-5 instead of a 10-6.

RADIO CONTROL NOTES
When flying R. C. it is necessary to reduce venturi opening from 25 to 50% on almost all engines. Large props slow your engine R.P.M., reducing suction. The model does not fly level at all times . . . dives and stalls are encountered changing the fuel force. Plug the venturi opening to such an extent that you get the power you want from your engine. Too much speed in R.C. can be disastrous.

GRISH BROS.
St. John 1, Indiana

the need of such a split in R/C has been talked about for some years, it has not seemed really necessary, if we are to take the results of contests as a criterion.

Sometimes the multi boys clean up, sometimes the rudder-only flyers do; perhaps the time has finally come, though, when something will really have to be decided on this subject. There is tremendous interest—and plenty of activity—on all sorts of multi-control systems, and it seems certain that 1954 will see plenty of more complex control equipment in use, especially at contests. Still, we must insure that the builder who has just gotten into the game will not be overwhelmed by these systems, and will feel he has some chance to reach top place, even if he cannot afford the more complex rigs.

If the thing is to be workable, we feel it has to be set up ultra-simple; modelers being what they are, the more ingenious ones will surely find a way around any rules that leave the slightest loopholes. Take that "one sensitive relay" split mentioned above; it would be no time at all before some hotshot would show up with all three controls (rudder, motor and elevator) worked from one such relay. In fact, such systems have been in use for years. Or consider that "single control surface" suggestion—another friend who heard this said, "Fine, I'll fit a V-tail on my plane and use the two flippers differentially (as on the Beech Bonanza) for a rudder. This is a single control. But why can't I also move them up and down together for elevator action—it's still the *same* single control?"

We are convinced that any such rule, if it is to be workable and stay that way, will have to state simply that the elementary class shall consist of planes fitted with rudder control only—PERIOD! We would be very interested to hear other views on this, and to learn how class splits have worked out at meets where they have been tried.

The past R/C contest season has produced quite a few hassles over contest rules and their interpretation. We would appreciate hearing from parties who have been involved in such disputes, or who

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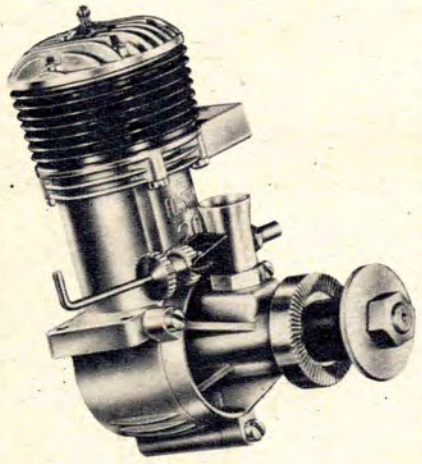

MODEL F-29 or F-31
$11.20

To clear the flying fields of worn out, balky old engines—to give thousands of modelers a fresh start with a top quality engine, we make this sensational offer:

Mail your old engine to us, no matter what make, size or condition, even though some parts are missing! We will allow you $5.00 for it in trade towards a brand new FORSTER front rotary valve engine. Your old engine and only $6.20 will bring you the latest and best model F-29 or F-31 FORSTER engine, made by the oldest established model engine manufacturer in the U.S.A. and known the world over for outstanding precision, performance and fuel economy.

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it's trade-in time for a better deal!

YOUR ENGINE IS WORTH MORE ON A NEW "FORSTER"—NOW!
FORSTER BROTHERS 8 LANARK AVE., LANARK, ILL.

have heard of them, and suggest that they write to us, or to AMA Headquarters. The disputes will be handed to the AMA R/C Committee, who set up the rules in the first place, and official "interpretations" will be printed here. Let's hear your beefs!

Commercial Dept. Many requests have reached us for back issues of Air Trails containing R/C material. Some issues are no longer available, and newcomers might not want to purchase them all even if they could, just to get the R/C items. Hobby Helpers now offers a book containing a carefully selected collection of R/C material from Air Trails and the various A.T. Model Annuals; called "Basics of Radio Control for the Model Builder," book sells for 35c, and is the biggest thirty-five cents' worth you will ever see in the R/C category. Will be followed by another book along the same lines. This concern also offers free 16-page catalog of all full-size plans they offer, including many on R/C planes, cars, boats, and allied subjects. The book mentioned above is a boon to the more experienced builder, who finds it most helpful to have all this info right in one volume. The address of Hobby Helpers is 770 Hunts Point Avenue, New York 59, N. Y.

A new super-sensitive relay has been put on the market by Potter & Brumfield, can be had from most large electronic suppliers. Called Type SS5D, this is a two-coil job with screws for all adjustments, and a series coil resistance of 10,000 ohms. Will work just the same with coils connected in parallel to give a total resistance of 2500 ohms—fine for hard tubers. Relay weighs 3.65 ounces, is extremely rugged in construction, and of about same size and shape as Sigma 5F. Net price is $9.90.

We have learned that snap connectors made for the miniature Eveready 45 V. battery described here in Dec. '53 issue may be had from Cinch Mfg. Corp. (1026 Homan Ave., Chicago 24, Ill.) or from A. W. Franklin Mfg. Corp. (43-20 34th St., Long Island City, N.Y.). The battery, Eveready type 415, is used in new Emerson pocket broad-

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One of MONARCH'S famed "SPITTIN' IMAGE" models—(others being Curtiss P-40F and Spitfire). Recognized as the greatest half "A" control line scale models ever. Superb design and amazing Pre-Fabrication make each a masterpiece. Includes spinner, and every luxurious extra. Wingspan, 20 inches.
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- World's first scale model plane designed especially for radio control!
- Ideal for sport free flight and control line flying!
- Completely pre-fabbed to scale from Piper Aircraft Corp. factory plans!
- All parts die-cut or shaped!
- GIANT-SIZE, EASY-TO-READ, STEP-BY-STEP PLANS AND INSTRUCTIONS INCLUDED!

Get your Sterling Piper Tri-Pacer at your dealer's . . . now!

A COMPLETE LINE OF SCALE MODEL POWER BOATS! Some designed for radio control. HARCO '40' DELUXE CABIN CRUISER

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Ryan S-T	C-7	5.95
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Richardson 27' Cruiser	B-1	$5.95
Higgins 17' Speedster	B-2	4.95
Chris-Craft 47' Buccaneer	B-3	7.95
Century Resorter '20'	B-4	3.25
Century Sea Maid '20'	B-5	2.95
Chris-Craft 32' Cruiser	B-6M	9.95
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Chris-Craft 50' Catalina	B-7M	11.95
Deluxe 66-pc. scale marine fitting set for Kit B-7M	B-7F	4.95
Century Sea Maid '20'	B-8M	7.95
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EASY TO INSTALL

cast receiver.

Several new developments have been announced by Babcock Radio Eng. Inc. (7942 Woodley Ave., Van Nuys, Calif.). There has been some interest in the use of concern's BCT-2 and BCR-3 equipment on amateur bands, by licensed hams. This apparatus will cover ham 10 meter band, but tone modulated transmissions are not permitted there; such use is O.K. on 6 meter band, though, and Babcock has a modification deal whereby the ham returns the 27¼ mc. crystal to factory and receives free of charge a modification kit and full instructions on the changes. Data also covers receiver changes, and kit includes new tuning coil.

IN COMING ISSUES!

Walt Good's new Receiver and Transmitter for 27¼!

A new receiver, the BCR-4, and matching transmitter, BCT-4, will be ready for delivery in February. Receiver is a 5 tube job, and has three audio selection filters, to provide three separate control channels. Transmitter is in same size case as BCT-2, but has a control stick in place of the present push-button. Also in the works is a method of adapting BCT-2 transmitter for proportional control; it is expected that a modification kit for this, which allows a built-in electronic pulser, will be sold for about $4.00. Babcock will continue to sell tuned audio filters in five different frequencies, with weight of 3 1/3 oz. each.

A new midget escapement, the Model 202, is offered by E.C.C. through their U.S. representative, American Telasco, Ltd. (166 Spring Rd., Huntington, N.Y.) Unit weighs only ½ oz. and measures about 1⅛" x 15/16" x ½" thick, exclusive of shaft. It is of very sturdy construction, and is of the 2-arm self-neutralizing design. Shaft has ball thrust bearing.

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PARTS ONLY 10¢ AND UP

AN ACCESSORY FOR EVERY HOBBY NEED . . .

AT ALL HOBBY-CRAFT STORES

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156 WEST WALTON PLACE
CHICAGO 10, ILLINOIS
FOR THE BEST IN MODEL ACCESSORIES

XRCS-1

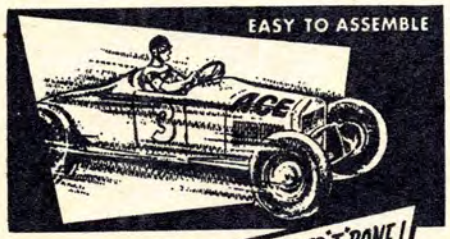
(Continued from page 49)

make the radio gear accessible. The wing is held on with rubber bands—*lots of them.* In case of a bad landing, the rubber bands give the wing a chance to move, if only slightly, so that the entire ship isn't wrecked.

The test hop took place at Centerville Airport. The day was bright and sunny, with practically no wind. I had installed a 10/6 power prop on the front and a left hander, I had made, on the rear. After a check of the radio, I gave the signal to let her go, and the ship started to move down the runway. It went immediately into a left turn and ended up on its nose in the tall grass bordering the airport. Result: two broken props. This was caused by torque; both props had the same pitch, and, as the rear prop is not nearly as effective as the front, torque took over. Being inexperienced with such models, I was not fast enough to counteract it.

The next attempt was with two 9/7 props, both home-made. This time Alex Schneider, 1952 National Champ, took the controls. The result was the same. We changed props again, this time installing a 9/6 Tornado Plasticote prop on the front and a hand-carved left hander with the same pitch on the rear. Then we waited for the wind. When a slight breeze arose, we headed the ship into the wind, with Alex at the controls. After it had gone approximately one hundred yards down the runway, Alex hit the "up" control, and the ship was airborne.

It started to settle, but he gave it a little more "up" control, and she really took off. Although it reacted in a very unstable manner at first, it finally "leaned out" and picked up speed. Alex then flew the length of the field at a speed, estimated by fifteen or sixteen fellows, in the neighborhood of 100 mph. Believe me, it was a thrill to see that ship, moving like a streak down the field, leaving a trail of smoke stretching far behind, like the vapor trail of a Sabre



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Get this really EASY-TO-BUILD scale model of the stripped down, souped up "T" Rod. Even youngsters can put it together quickly. Simplified parts, mostly ready-shaped, with instructions —packed in an attractive box for only 60c a kit: Get yours today!

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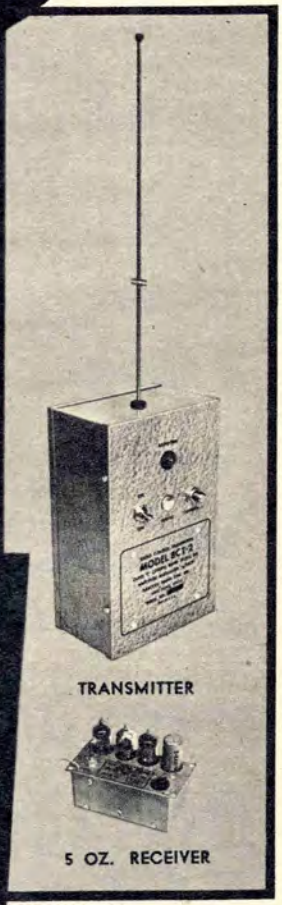

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TRANSMITTER MODEL BCT-2—Crystal controlled on 27.255 m.c. Separate modulator tube and audio oscillator. Loaded 3 ft. whip gives more than adequate range. Radiation indicator on panel, simply tune for maximum output.

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"THE "LIVE WIRE" Cruiser"

NEW!

A fine new 100% Radio Controlled model, very realistic in appearance, exceptional in performance, high in quality. *THE MODEL WHICH WILL SET THE PACE!*

The "Cruiser" has been developed to give you "big plane" looks and appearance, combined with the fine flying qualities of our Live Wire design. In the "Cruiser" you have the ultimate in R/C design, construction and utility giving a semi-scale model capable of contest performance under any conditions. The "Cruiser's" performance is exceptional with the simplest single channel radio, yet it accommodates the fabulous multi-channel systems with ease giving even finer performance with the additional controls!

SPECIFICATIONS:

Wing Span: 65½"
Wing Area: 775 sq. inches
Wing loading: Min. 13 oz./sq. ft.; Max. 20 oz./ sq. ft.
Weight ready for flight: 4 to 6 lbs.
Bare model weight: 3 lbs.
Power: .19 to .23 engines
2 or 3 wheel landing gear as desired

Kit Contents:

★ Full size working drawings
★ Complete instructions including radio installation
★ All necessary hardware
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Complete Kit $14.95

Exclusive Feature

New, More Compact R/C Unit

★ Remove entire R/C gear in less than one minute!
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THE "TRAINER" .08-.15 ENG.
THE WORLD'S MOST POPULAR R/C MODEL!

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THE "SENIOR" .19-.23 ENG. CUSTOM BUILT

"LIVE WIRE"

The name that signifies the PROVEN BEST for all R/C flying.

Only with Live Wire Models do you get all these superior design features!

PENETRATION . . .
The force arrangement is such that it provides exceptional wind penetration without excessive power. Climb is controlled under all flight conditions and speeds.

STABILITY . . .
All design factors are aimed to provide exceptional stability and immediate recovery from abnormal positions without sacrificing maneuverability.

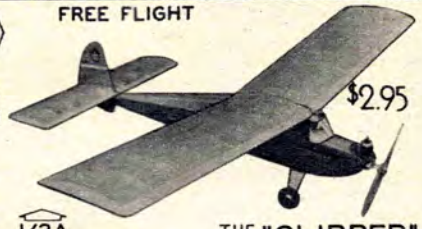
POSITIVE CONTROL . . .
The Live Wire is instantaneously maneuverable and responds to any rudder action whether in the glide or under power assuring fine precision flight.

REMOVABLE R/C UNIT . . .
All the radio gear is installed in a removable unit making things easy to get at. This results in more and better flying with less work.

SIMPLIFIED STRUCTURE . . .
The extensive use of prefabricated sheet balsa makes for a simple to assemble model with extreme strength which gives many trouble free flights.

A/1 MATERIALS . . .
Live Wire kits are complete kits for building the model. All materials are unconditionally guaranteed to be the finest, instructions cover building, radio installation and flying, plans are complete and full size.

FREE FLIGHT



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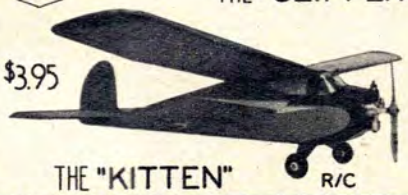

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THE "KITTEN" R/C

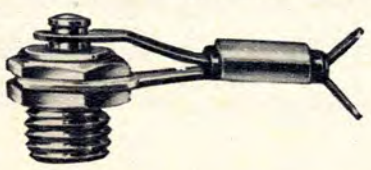
PRODUCT OF **THE DEBOLT MODEL ENGNR CO.** WILLIAMSVILLE, N. Y.

HOLLAND Wasp ACCESSORIES

AT YOUR DEALER

Adapter plates available to fit most popular makes of engines.

It's for you! A 3 for 1 bargain unit! Micro tank, timer and engine mount at the cost of most tanks only. Start and adjust engine with full tank—release valve lock and engine runs out only predetermined amount of fuel in timing cell.
For .049 and similar engines, **$1.50**
For .19 to .33 engines **$1.75**



Clip seconds off your starting time with HOLLAND Instant-Action GLOW PLUG CLIP. One hand does the trick when you use the Holland Glow Plug Clip. Clip it on—snap it off—you're on the air! . . **15¢**

NEW! HOLLAND HANDY WRENCH
Two-ended wrench for loosening or tightening glow plugs and removing cylinders—without damage. Accurately engineered to fit most engines. Keep one handy in your tool box! . . . **25¢**

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jet. And, when Alex put her nose up in the air, she hardly slowed down a bit.

After flying for two or three minutes, Alex told me he had lost control and couldn't bring her out of a sweeping left turn he had put her into. I told him to try "killing the engine" which, luckily, he was able to do. The minute the engine was cut, his control came back, and, to the surprise of everyone, it had a fast but fair glide, and he landed it less than one hundred feet from the transmitter.

And that is the story of the first (to my knowledge) radio-controlled speed ship. It was a most exciting experience, but my real incentive for completing the ship was that they said "it couldn't be done." In fact, one of the remarks after the flight was: "If I hadn't seen it, I wouldn't believe it."

Some of the things I proved to myself and others are: a ship can be built without a lot of dihedral in the wing, and still be stable, and, if the proper airfoil is used, downthrust is not necessary in the engine. Stabilizer, wing and engine were set at a true zero. On a counter-rotating co-axial propeller setup, the rear prop must have at least fifteen percent more pitch than the front, if you are to do away with torque. And finally, a ship with a wing load of 45 ounces per square foot will glide enough to make a safe landing.

—W. J. "BILL" MacKARRACHER

Southern Scene

(*Continued from page* 16)

than Texas did.

For you free flighters and R/C men here is some news. L. R. Purdy, Box 393, Smyrna, Ga., has perfected a new elevator and rudder escapement. Has one rubber motor and self-neutralizer. He has been working on this for two years and says that his cam action escapement gives greater power with the same amount of rubber; that the control box unit is such that the pilot does not have to remember any sequence, and

Cavacraft's NEW flying models

Two Famous World War I SCALE Single Seat Fighters

BRITISH S.E.5
(Kit G-2)
FOKKER D-7
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ALL PARTS IN PLACE FOR FULL PROOF ASSEMBLY

ASSEMBLED IN THE BOX

AT YOUR DEALERS **$2.95**

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2045-47 North Trenton Avenue, Philadelphia, Pa.

that it makes possible more precise radio control. If interested, write him.

Frances Strickland of Stone Mountain, Ga., one of the better free flight feminines, is going into speed this year. She asks why the Nationals don't put up a trophy for "Best Girl Flyer." We agree that some recognition for the best girl performer at the Nats would be popular.

George Perryman is experimenting with a Canard, original hand launch glider. It has the appearance of flying backward, because the stabilizer is on the front ahead of the wing. George says, "The advantages are that the stabilizer *and* wing both give lift, making it glide better." His version puts the weight on the tail instead of the nose. It adjusts exactly backward from conventional models. Sounds interesting, doesn't it?

Harold Asborn, remembered down here as a classmate of Stu Richmond at Georgia Tech, has returned from California and cast his lot with the Decatur Model Club of Decatur, Ga. Harold held the 1948 national record in what was then "Class C fuselage," and is still one of the top men in free flight. Hasn't been to Nats lately; says he likes the informality and fun of regional and smaller meets. He comes up with a good

"All I said was, 'Better luck next time.'"

Power Plus!

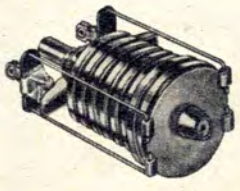
2 GREAT *NEW* JETEX ENGINES
in addition to the famous #50 and #150

New, improved Jetex engines bring you more enjoyment, greater thrills from jet-powered free-flight. Here is all the power, dependability and economy for which Jetex engines are famous . . . plus the most spectacular performance you've ever seen.

Jetex #50 Contest Special

A new improved model of the famed #50. Designed for use with augmenter tube in scale models. Built for highest efficiency and greatest reliability.

SPECIFICATIONS: Thrust ¾ oz. Duration 12 seconds. Wt. (with fuel and augmenter tube) ½ oz. Length 2", Diameter ¾". $2.95*
*includes augmenter tube, fuel and accessories



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The most powerful and efficient Jetex engine yet developed. Thrust exceeds weight by nearly 300%. Produces peak thrust from beginning of run.

SPECIFICATIONS: Thrust: 6 oz. Duration: 10 sec. Wt. (with fuel and augmenter tube) 2.2 oz. Length 2¼", Diameter 1¼". $8.95*
*includes augmenter tube, fuel and accessories

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BATTLE TANKS
Designed From Information And Photos Supplied By U.S. Army Ordnance
$2.95 EACH
PLUS 25¢ POSTAGE

USA Patton "48" 11½-in. Long

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U.S.A. T-41 "BULLDOG" 12-in. Long

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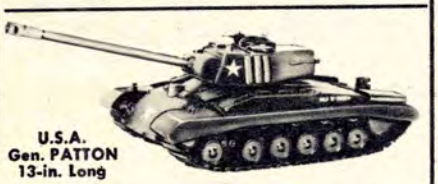
U.S.A. Gen. PATTON 13-in. Long

RUSSIAN "STALIN" 14½-in. Long

WITH THE ROTATING 'ACTION' GUN TURRET

NOW AVAILABLE: — A complete line of Korean and World War II battle tanks by MERCO. Designed from information supplied by the U.S. Army Ordnance. Simple construction from full-size plans. Build authentic models for your den or library. SCALE: 1 inch equals 2¼ feet.

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suggestion to flyers who have more trophies than they know what to do with. "Pull out some that were not engraved and offer to juniors in your local meets as special awards."

Joe Jones, one of the better flyers down Gadsden, Ala., way, has moved to Atlanta and teamed up with Bob Elliott. Now a member of the Cascade-Beecher club, Joe is getting a kick out of once-a-month winter contests which are held in metropolitan Atlanta. We hear that Herbert Davis, Birmingham, known nationally for his success in speed, is turning into an advanced R/C flyer. Without a doubt R/C is the fastest growing event down South. Many fans are building special models, smaller and faster, in anticipation of the annual Radio Control Race held every June at the Southeasterns. Jim Walker really started something when he put up that big perpetual for this event.

Jim Walker's personal appearance at the 1953 Greater Southeasterns, and his exhibitions must have encouraged some flyers to go in for "exhibitions" down our way. Jack Scharpf, Jr., nationally known judge of precision acrobatics, is working on a "à la Walker" Sabre Dance. Sherman Holt, a familiar name to me, created quite a stir in Fayetteville, N. C., when he donned a football helmet, with his control lines attached, and stunted a self-designed plane "hands off"! These fellows are going in for "endurance" flying also. He and Jim Cronise claim that world's model plane endurance record of eight hours, thirty-one minutes. Incidentally, Jim is the president of the Fayetteville Circle Burners model club. . . .

Am inviting flyers who have won some titles to let us know what kind of work they follow to make a living—that is, "open" flyers. Would be interesting to hear. For example, Lamar Parker is Business Editor of the Macon Telegraph newspaper. Such would make interesting news! Also tell us what your greatest thrill was in any model meet. That will give you something to write in for Southern Scene news.

—*R. H. Elliott, Box 5078, Atlanta 2, Ga.*

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KENHI MODEL PRODUCTS

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(*Continued from page 57*)

another oz. Kit with tube, relay, $26.50.

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Air Notes

In quest for more speed Merle Larson of Oakland, Calif. has fitted a Taylorcraft fuselage with a 12 ft. wing of his own design which has full-span flaps and spoiler ailerons.

Yeager in AF's Bell X-1A Reaches Speed of 1600 mph

AIR FORCE highly pleased with recapturing the laurels of high-speed flight. Major "Chuck" Yeager piloted rocket-powered Bell X-1A to a speed of slightly over 1600 mph, earning for second time the title of fastest man on earth. The X-1A, though outwardly the same as its equally famous sister ship the X-1, which was the first aircraft to fly faster than sound and also piloted by Yeager, is five feet longer, has an increased fuel capacity and is equipped with a turbine pump to force-feed the fuel to the rocket. The X-1 had a pressurized nitrogen system for fuel transfer which reduced plane's flight endurance and limited speed to 967 mph. The wingspan of X-1A is 28 ft., length 35 ft. 7 in., and all up weight is 16,000 lbs.

★ ★ ★

NORTH AMERICAN F-100 Super Sabre reached a speed of 900 mph at 35,000 ft. during test flight over Muroc. . . . AROUND the world in 91 hours flew 23-year-old Pamela Martin of Chicago, Ill. Flight was made over commercial airlines, consumed one week-end. On London to Tokyo leg, Miss Martin flew in the B. O. A. C. Comet. . . . NIKE, Army's first guided missile, out of experimental stage and soon to take its place in national defense system. Missile is ground-to-air type, equipped with complex guidance system to ferret out and bring down enemy bombers. Named after Greek goddess of victory, pronounced Neekay. . . . ALL-WOMAN transcontinental Air Race will be held this year on July 3rd through July 6th, starting at Long Beach, Calif., terminating at Knoxville, Tenn. . . . TRANSATLANTIC flyer Charles A. Lindbergh has been awarded the Daniel Guggenheim Award for "pioneering achievements in flight and air navigation." . . . FIRST commercial air transport of Japan Air Lines came in at the San Francisco International Airport. Plane was a DC-6B, one of several ordered by JAL.

★ ★ ★

ROYAL CANADIAN AIR FORCE has ferried over to England between 300 and 400 Canadian-built F-86 Sabres. The jet fighters are for use of the RAF. Average crossing time has been 6½ hours. . . . TRANS-CANADA Airlines using Bristol Freighters for cargo transport. . . .

★ ★ ★

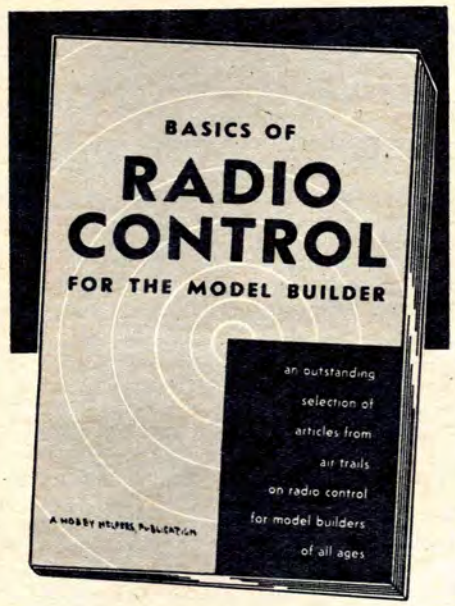
A BOEING WB-29 of the 58th Arctic Aerial Weather Reconnaissance Sqdn. has made more than 1000 weather flights. Each flight takes 13 hours, carries plane to within 300 miles of North Pole. . . . SECOND Convair YF-102 delta wing jet fighter delivered to Edwards AFB, Muroc, Calif. for further testing after the first 102 was washed out during experimental flight. . . . FIRST shipment of North American F-86K Sabre jet interceptor parts to be assembled in Italy has been delivered. F-86K is identical to the F-86D with the exception of armament, which consists of four 20 mm-cannon instead of 24 Mighty Mouse rockets carried by F-86D. Fifty of the F-86Ks will be assembled in Italy's FIAT plant. . . . CONVAIR has launched its first production R3Y, the Tradewind, Navy four-turboprop powered flying boat. . . . AIRCRAFT INDUSTRY is nation's second largest employer, according to Mundee Peel, president of Republic Aviation Corp. More than 750,000 workers in aircraft plants.

★ ★ ★

CHANCE VOUGHT, Aircraft Division of the United Aircraft Corp., builders of the Navy twin-jet F7U-3 Cutlass fighters, separated from the parent organization and has now become Chance Vought Aircraft, Inc. . . . NEW YORK University of New York City offers courses for training of Ground School Instructors, Aircraft Dispatchers and Commercial Pilots. . . . NAVY testing steam catapult for launching of carrier airborne aircraft at Naval Air Materiel Center, Philadelphia. Steam catapult has five or six times the launching power of current hydraulic models, can launch easily the heavier type of aircraft now in service with the Navy. . . . LOCKHEED AIRCRAFT CORP. has set up a separate guided missile division.

★ ★ ★

AMONG the great number of aviation books which hit the market in celebrations of 50th Anniversary of Flight one of the most elaborate is "Flight," prepared by editors of *Year*. The lavishly illustrated volume measures 10½" x 14", includes over 1000 photographs, some never published before and 75,000 words of text covering aviation since the time it was just a glimmer in man's eye to the present. Published by *Year*, 11833 Wilshire Blvd., Los Angeles 25, Calif. Price $10.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CONTENTS

Glossary of R/C Terms and Symbols • Basics of R/C • R/C Equipment • Directory R/C equipment manufacturers • Planning the R/C set-up • Moving the Control Surfaces • Elements of R/C • Directory of R/C model clubs • Directory of R/C kit manufacturers • Questions and Answers on R/C • Directory of R/C accessory suppliers.

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Sailplane Parade

■ Though the glider made successful flights before the airplane and soaring flight was achieved as far back as October 1911 when Orville Wright stayed up 9 min. 45 sec. over the North Carolina dunes, the how and why of motorless flight is still covered with the cloak of uncertainty for many. Air currents and their effect on aircraft are fairly well known to aeromodelers and airplane pilots, though the latter prefer to shy away from them because of turbulence associated with moving air. Glider pilots, on the other hand, seek them out, since within them they find the energy which serves as the powerplant for their motorless craft.

The high-performance glider, correct name for which is *sailplane*, is specially designed and built to take best advantage of rising air currents and is capable of reaching extremely high altitudes and covering long distances. In order to achieve this it must have a very efficient wing capable of considerable lift, and the entire structure must be well streamlined to offer minimum resistance (drag) in the sailplane's path through the air. The ratio of lift over drag, or L/D as the "boffins" call it, is the efficiency index of the sailplane; it is also an indication of its glide angle, the distance covered horizontally for altitude lost: thus, an L/D of 30 means a glide angle of 30 to 1. Such a sailplane, therefore, can fly far, since from an altitude of 2 miles, it can glide 60 miles in distance.

MARTIN MERCATOR
Bill of Materials

32 ⅛" x ⅜" x 36", fuselage planking. 4 ¼" x ½" x 36", fuselage crutch, leading edge. 4 ⅛" x 3" x 36", formers, ribs, spars. 1 ¼" x 3" x 36", spars. 6 1/16" x 6" x 36", wing skins. 1 ½" x 3" x 36", tails. 1 1½" x 3" x 24", nacelles. 1 1" x 24" of ¼" plywood, landing spar. 1 2" x 4" of ¼" plywood, firewalls. 1 ¾" x 11" of ⅛" plywood, landing gear spar. Scrap blocks for turrets and radomes. 24" length 1/16" dia. wire, pushrod. 6" length 3/32" dia. wire, horn rods. 36" length ⅛" dia. wire, landing gears. One 2" dia. wheel. Pair 2½" dia. wheels. One 3" bellcrank (insulated). Two 36" length 1/32" dia. wire, line leads. Two #7 or #8 Perfect wedge tanks. Cement, clear dope, tissue, primer, colored dope, decals as needed.

The other requirement is a low sinking speed, the rate at which the sailplane descends vertically in relation to time. The sinking speed of a standard sailplane is around 3 feet per second. It depends on the wing loading of the craft (gross weight divided by wing area) or how much weight each square foot of wing is carrying. The lighter the wing loading, the less is the sinking speed. This factor is very important in soaring as it enables the sailplane to take advantage of weak air currents. The sinking speed of a glider can be determined by dividing its forward speed, in feet per seconds, by the gliding angle; thus if the sailplane has a cruising speed of 50 mph (80 ft/sec) and the glide angle is 30 to 1, the sinking speed will be 80 divided by 30, or 2.7 ft/sec.

From the foregoing it can be seen that in order to qualify for the title of a sailplane, the glider must have an efficient wing for good lift, and clean streamline form to achieve a good angle of glide and light weight for a low sinking speed. However, too light a weight has an element of danger in it as the structure is apt to be weak, and it is necessary, therefore, to sac-

(*Continued on page 74*)

Air Trails FULL SIZE PLANS

Group 354

"HIGH-Q" — Jack Port's National Championship Radio Control Plane, winner of the famous R/C Trophy at the Philadelphia "Nats." Spans 54 inches, fuselage is 40 inches overall; takes .19 engine. Won with rudder-only control!

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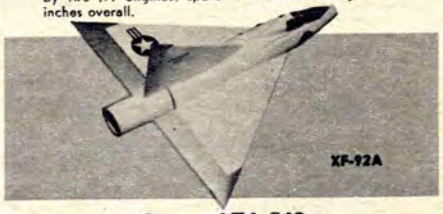

Group ATA 542
from the Air Trails Model Annual for 1954

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XF-92A control line jet-powered flying scale model by Frank Lashek. For Dyna-Jet power. This all-white Convair delta model won acclaim at Nationals and Mirror meets. Spans 31 inches, is 41 inches long. A master project for the advanced aero craftsman.

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"A-PAY" — Frank Ehling's PAA-Load model for Class A Competition. Takes Torp .19, spans 58 inches. Four foot fuselage. Unique stab-ahead-of-rudder design has been flown by many Eastern builders. A proven contest performer that's brought home the cash.

REPUBLIC P-47 THUNDERBOLT control line flying scale by Walter Musciano. Detailed plans give info for three versions, the "B", "D" and "N". For power plants in .14 to .35 range. Spans 32 inches, has overall fuselage length of 26 in.

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Sky Fury

(*Continued from page 48*)

required very little break-in time. Tests were begun when the engine showed it could run a complete tank of fuel without slowing down or stopping. Working speed was 10,300 rpm.

Normally the running test would have ended here, but after disassembling the engine for inspection purposes and discovering that the cylinder liner was so easily removed, it was decided to reassemble the engine with the exhaust ports lined up squarely with the exhaust stacks. The three-view shows the engine as received with the exhaust port bridges so positioned as to obstruct the flow of exhaust gases. Excess metal left around the inner edges of the rotary valve after the factory drilling operation was cleaned off. Running the engine after making these two very simple modifications proved their worth. The rpm was upped 900 rpm.

Sailplane Parade

(*Continued from page 73*)

rifice somewhat the sinking speed in order to achieve structural ruggedness. Even so, the heaviest sailplane rarely exceeds the wing loading of 6 lbs. per square foot of wing area, which is below even such lightweights as the Piper Cub.

The high-performance sailplane can always be recognized by its long, slim, high aspect ratio wing, which because of its narrowness has little induced drag as compared to the broad, short one. Ailerons are larger compared to those of power aircraft, as they must react quickly at slow speeds. So large are the ailerons on some sailplanes that they are split in the middle to prevent binding at hinges due to the flexion of the wing itself.

Because of the long glide angle and low sinking speed, landing a sailplane in a small field over obstructions such as trees presents a problem unless the craft is side-slipped, a maneuver not usually favored by sailplane pilots because of the ship's long wing. In order to increase the sinking speed and steepen the angle of glide to permit short landing, "spoilers" are built into the upper and lower surfaces of the wings at approximately mid-span position. These consist of rectangular plates, about 18 inches long and 6 inches high, hinged at the bottom, rising upright when actuated by control from the cockpit. Their function is to spoil the lift of the wing and increase drag; this kills all the floating tendency of the glider, increases the sinking speed and permits landing into extremely small fields. The virtue of the spoilers is that in case of mis-

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FOR SALE—27 aristrol transmitter, Meter, batteries $15.00. Ted Lindemann, Box 1080, Madera, Calif.

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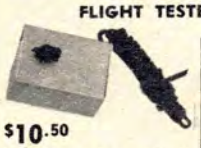

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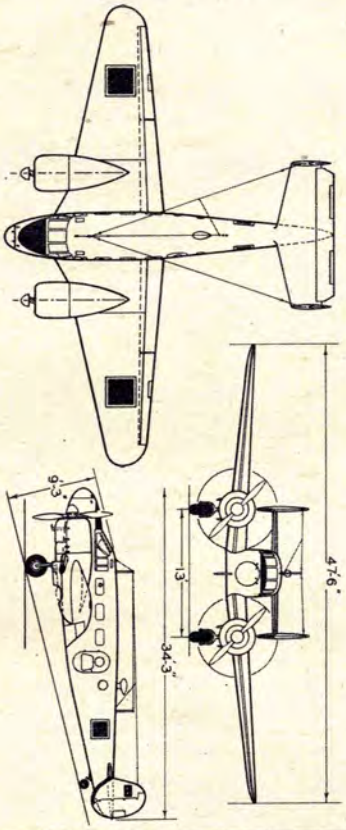
The fragile appearance of the sailplane is deceiving. It is a rugged machine with a strength factor closely approaching that of a fighter plane. Its design problems approach closely those of high-speed aircraft, as it must combine high structural strength with light weight. The sailplane continuously flies in the region of turbulent air and in order to achieve height, which can then be translated into distance, it may have to enter storm clouds where it is at the mercy of violent air currents that are capable of breaking up large airplanes. It is to the credit of the designers that structural failure of sailplanes due to rough air is extremely rare.

Beech 18-S



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SMM's A/2

Half-A Snapper stunt trainer is new offering from Southwestern Model Manufacturers, Box 571-W, W. Tulsa 7, Okla. Goes for $2.25. Built-up wings, paper covered. Sorry, no further specifications from the maker; from photo it appears fuselage is sheet box with inverted engine.

All-balsa Half-A stunt model by Joy Products, Menominee, Mich., is named "Thunder Bug." Spans 18 inches, has 15 inch fuselage. All parts pre-cut. End plates on wing provide novel note. Engine is side mounted. Decorating scheme here looks like good idea for any model.

MENOMINEE MADE

DIS IS DE GREATEST

Save on repairs—fly on longer lines, contends Model Airframe Accessories, Box 596, Bellflower, Cal. The Deslacker ($2.00 by mail) is de ting to do de job. No more accidents caused by wind or lost control—again we quote MAA. Sounds sensational. For control line models, of course.

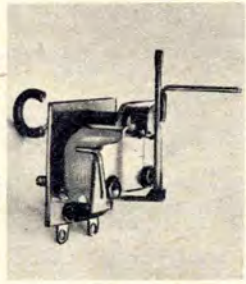
Big news to thousands of young enthusiasts is the announcement of a new Monogram Superkit, a MiG-15 Russian jet fighter with plastic and balsa scale model finished parts. Even has a Russian pilot—in plastic, fortunately. Assembly kit sells for 89c in stores. Colorful decals included.

MONOGRAM MiG

SHUT OFF

Popular with expert flyers for some time, the Hillcrest fuel shut-off timer is now available for $1.35 from Model Plastic Products, 1695 Cordova St., Los Angeles 7. Light and accurate, device weighs but ⅓ oz. Adjustable duration; flight tested; guaranteed.

SMALLEST AND LIGHTEST



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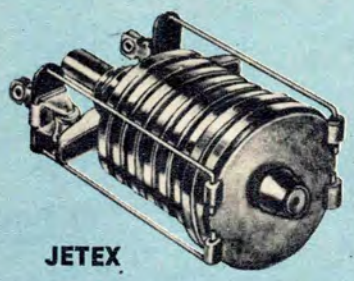
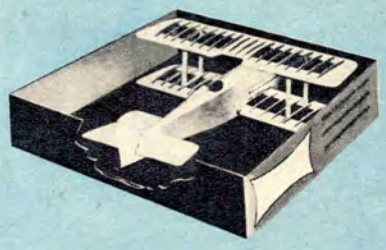


JETEX 600

American Telasco, Huntington, N.Y., imports the Jetex Scorpion "600", a real powerful jet with augmenter tube, fuel and accessories selling for $8.95. Has 6 ounces of thrust. With fuel and tube weighs 2.2 oz. Power duration is 10 seconds. Length is 2¼ inches, diameter 1¼ in.

VECO'S NEWEST

For .19 to .31 engines Henry Engineering Co., Burbank, Cal., has just the item: the Redskin. This scale-like team-type racer is $4.95 control line kit which makes up into 31 inch span job of 170 square inches of wing area. The Veco folks say you can build it in very little time.



BOXED BIPE

This is something to really see! Cavacraft's new control line flying models for Half-A engines come assembled in the box. Two models are now available: the British S.E.5 and the Fokker D-7. Balsa and plywood construction. Wingspans are 14 inches. Both models are priced at $2.95.

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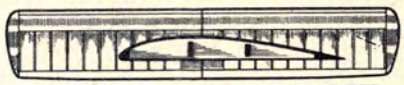
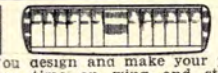


SPAN	CHORD	STAB	PRICE	P.P.
60"	10"	25½	3.95	50
50"	9"	20½	2.95	50
42"	7"	20½	1.95	25



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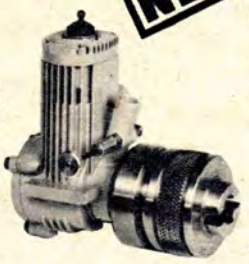

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Double jet model complete with grooved flywheel and starting cord.

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It comes complete with starting cord and slotted flywheel for universal drive.
This engine was developed especially for use with a flywheel and desired needle valve settings are easily obtained due to special governor porting which prevents its running away with itself when no load is being applied. It has been thoroughly tested and proven under every conceivable operating condition in numerous types and sizes of model boats and has given excellent performance even under adverse circumstances.
It is extremely rugged and well built for long, trouble-free service.
It is easy starting and develops great power.

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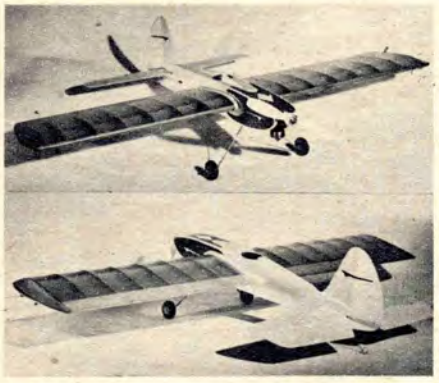

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Fuel Pumps and Pressure Tanks

(*Continued from page 36*)

180° around from the intake. This is in extreme position, and put there because of the spring-loaded ball that acts as a ratchet for the timer. The pump is effective in this location, however.

Caution should be used in tapping the threads once you have drilled the No. 36 hole in the backplate or main bearing. Clamp your jig in a vise to give a rigid mounting and tap with care by hand. See Photo 12. Most backplates are less than 1/8" thick, so that you will have no more than three turns of thread to hold the pierced screw. Be sure the tap is held vertical to the hole and not allowed to weave while you are tapping it out.

A word on starting: Pressure in your tank requires a much narrower needle-valve setting. Say your motor ran five turns open when not pressurized. Hook up your pressure rig. Fill the tank and seal. Open needle valve one-half turn. Prime motor lightly through exhaust. Hook up glow-plug and flip. Repeat, opening needle valve about 1/8 turn each time, until motor runs. When she catches, note needle setting, then open needle valve slowly until motor four-cycles. Note second needle setting. Try your first flight half-way in between the starting setting and four-cycling setting.

This caution is required because all ships, even with pressure tanks, tend to run leaner in the air than on the ground. Pressure tanks keep motors supplied with fuel even when they are barely running. This means that a pressure tank can pretty nearly burn a motor up in one long flight of excessively lean running. If this happens to you in the air, our advice is to knock the prop off to prevent damage.

When you have found the setting that is perfect, lock the needle valve so that it cannot turn. You should be able to start in

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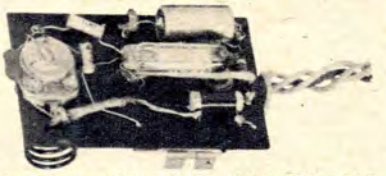

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that setting and need no adjustments except for large changes in temperature or different props. Don't prime your pressurized job when starting. Choke and flip once, then hook up and start. As soon as your ship runs out of fuel and lands, it is a good idea to release the pressure in the tank, since sometimes a little fuel remains and is pumped into the carburetor and spills badly in the motor section. It's an invitation to a fire.

You Ask: "AT" Answers

(*Continued from page* 15)

● Sorry, we have no information on the P-76 beyond that it was a Bell airplane, similar to the P-39. For information on the history of the B-26 Invader, suggest you write to the Public Relations Office of Douglas Aircraft Co., 3000 Ocean Park Blvd., Santa Monica, California.

Query on Corps . . . I would like to know what the U.S.M.C. on the wing of Top Flite's Stinson Sentinel means. One of my friends says it is the U.S. Medical Corps. I say it is the U.S. Marine Corps. Who is right in this case?

Paul Winslow, Pittsburgh, Pa.

● You are.

Bell Airabonita? . . . Was there such a plane as the Bell Airabonita?

Barry Shandler, Hillside, N. J.

● Bell Airabonita was a P-39 Airacobra with two-wheel landing gear and arrester hook for carrier landing. A Navy experimental plane, it never went into production.

Grumman XF5F Skyrocket . . . Whatever happened to that carrier-based Grumman fighter plane that came out near the end of the war? It was a single-seater with two radial engines and twin rudders. It had a conventional fuselage which did not project forward of the leading edge of the wing, however.

E. Menkes, Bedford Hills, N. Y.

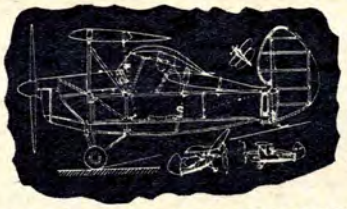
● The plane you mention was the Grumman XF5F Skyrocket. It was an experimental job and never went into service. You could say that the Skyrocket was the ancestor of the F7F Tigercat.

F-51 vs. Focke Wulf FW 190 . . . I was wondering whether the F-51 was a better plane than the Focke Wulf FW 190. Could you give me the rate of climb of both planes and their characteristics?

Francis Posney, Brackenridge, Pa.

● According to published sources, the F-51D seemed to have an edge on the FW190 in speed. Top speed of the F-51D is quoted as 435 mph at 25,000 ft., climb to 30,000 ft. in 10.8 min. The FW 190 had a top speed of 395 mph at 19,000 ft. and could climb to 18,000 ft. in 6.5 min. The rate of climb was thus almost the same for both.

Con-V-Air . . . In a recent issue there were two articles about the XF-92A. One article says it's the Convair XF-92A, and the other



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says it's the Consolidated Vultee XF-92A. Which is right?

Eddie Moarman, Tampa, Fla.

• Both are right. "Convair" stands for CONsolidated Vultee AIRcraft Corp.

Republic P-47D . . . Can you tell the speed of the Republic P-47D Thunderbolt, and what happened to it after World War II?

Gerald Kislaitis, Chicago, Ill.

• The top speed of the F47D was over 400 miles per hour. After the war it was turned over to the National Guard Squadrons.

Cosmic Winds . . . I am a Japanese aviator looking forward to flying again.

Your article, "Goodyear Round Up," was very interesting. I will appreciate it if you would inform me by whom and where these standard "Cosmic Wind" type standard planes are built.

Kazuo Sugimoto, Gifu-Shi, Japan

• The Cosmic Wings midget racing planes were built by Le Vier Associates in Burbank, Calif. This was a small organization headed by Tony Le Vier, chief test pilot at Lockheed Aircraft, and a famous racing pilot himself. However, the Lockheed company did not like the idea of their valuable man risking his life and limb in racing, and Le Vier disbanded the organization, selling the planes to the Pacific Air Races Inc., Van Nuys, Calif. Only three of these planes were ever built, Ballerina, Little Toni and Minnow. No further production of Cosmic Winds is considered.

HOBBY CALENDAR

List your hobby club's public shows here! Advise Air Trails not less than 90 days in advance. Give telephone of contact man if possible.

Address of contact man is in the same city as site of event unless otherwise specified.

CALIF.—Sacramento, Feb. 14. Modelplane free flight contest sponsored by Northern California F/F Council. Lyman Armstrong, 229 "B" St., Yuba City.

CONN.—Hartford, Feb. 17-21. Fourth Annual National Autorama, Conn. State Armory, Autorama Corp., 215 Broad St., Milford.

NEW YORK—Rochester, March 5-28. 18th Rochester International Salon of Photography, Memorial Art Gallery. E. F. Richner, 5 Crest Rd., East Rochester.

NEW YORK—New York, April 6-11. Auto-Lite Auto Show at Waldorf-Astoria.

CONN.—Hartford, May 16. Modelplane team race sponsored by Greater Hartford Model Airplane Club. Richard Matava, 358 Prospect Ave.

CALIF.—Los Angeles, May 29-30. Modelplane State Championships sponsored by Calif. State Exchange Clubs. R. E. Gass, 2864 Rutgers Ave., Long Beach 15.

PENNA.—Gettysburg, July 25. Modelplane contest sponsored by Gettysburg Model Airplane Club. J. H. Pitzer, 9 Hanover St.

Engine of German BV-141 . . . My eye caught your article where you said the German Mystery plane, Blohm & Voss BV-141, was powered by a B.M.W. radial engine of 1500 hp. According to my books on warplanes which my brother got when he worked as an interpreter in Washington, D. C., the Blohm & Voss BV-141 was powered by one Bramo Fafnir radial air-cooled engine of 1000 hp. I sure would like to know which is correct.

Oscar Tanjo, Cessey, Calif.

• Sorry, but you evidently got hold of a description of the prototype BV-141 which was powered by a 980 hp Bramo Fafnir engine. Production version of the airplane which was designated as BV-141B was powered by the B.M.W. 801 engine of 1500 hp.

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1½" or 2" or 2½" High

One Speed (one feed tube).....75c each
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Mounting Bracket included with all Acme Tanks

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Ask your dealer to show you the new Acme Anti-Stall R.C. Tanks and our Quality Battery Holders. You can be sure if you install this combination in your next R.C. job, Acme R.C. Tanks and Acme Battery Holders.

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RADIO CONTROL

NO OPERATORS LICENSE REQUIRED!

"Super-Aerotrol" is the original 27.255 Citizens Band Radio Control. Since its introduction, it has outsold all other makes. We have tested many modifications of the original "Super-Aerotrol" but present "Super-Aerotrol" under equal conditions cannot be out-performed by any similar type equipment.

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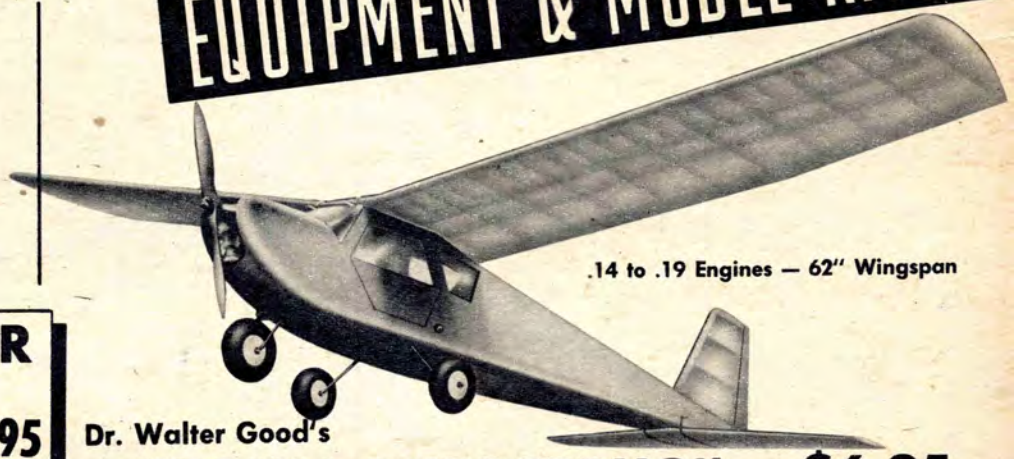
Combination Receiver-Transmitter Kit that sells for **$29.95**

Includes everything found in both DE-202K and DE-203K Kits. By buying them together it saves you **$3.95**



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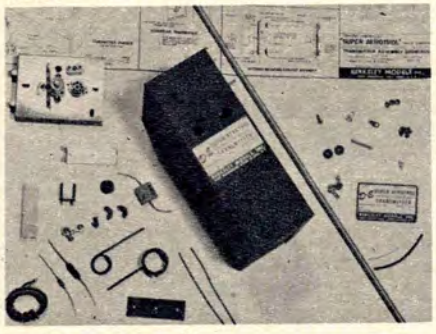
TRANSMITTER

In Kit Form: less tube **$19.95**

- Portable — Self contained — No separate antenna — No external Batteries!
- Operates on 27.2 mc. • Weighs 3.5 lbs.

Kit includes all necessary parts (except tube and batteries): Precision Ground Crystal; Painted Metal Cabinet; Finished Sectional Antenna; stamped and formed chassis with all holes punched; all necessary components, resistors, condensors, coils and chokes; color coded wiring. Can be assembled in less than two hours. Complete building and operating instructions are included.



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- NEW "locked-channel" dust-core tuning.
- Light in Weight, 2¾ oz. less batteries.
- Super-regenerator circuit, dependable.

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(Empty weight 21 oz. — Radio, Equip., 14 oz. max.)

Split rudder tab for separate trim adjustments. Clip-in prone engine mount, tri-cycle gear.

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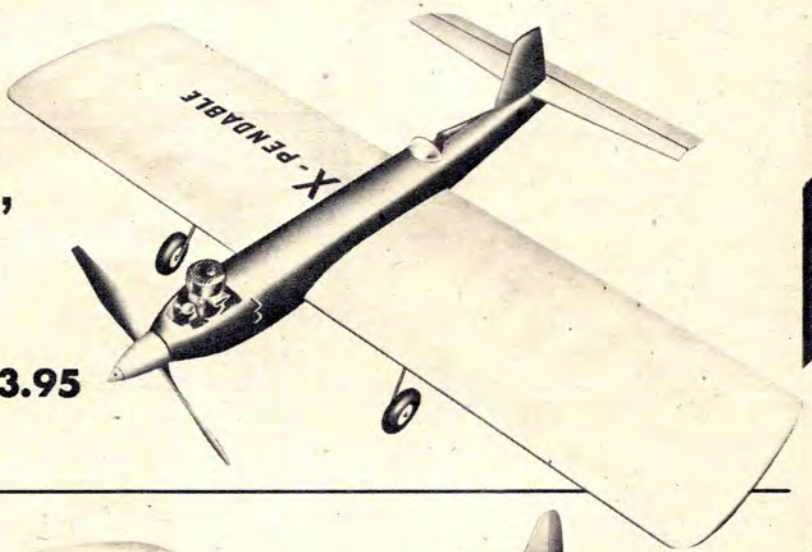

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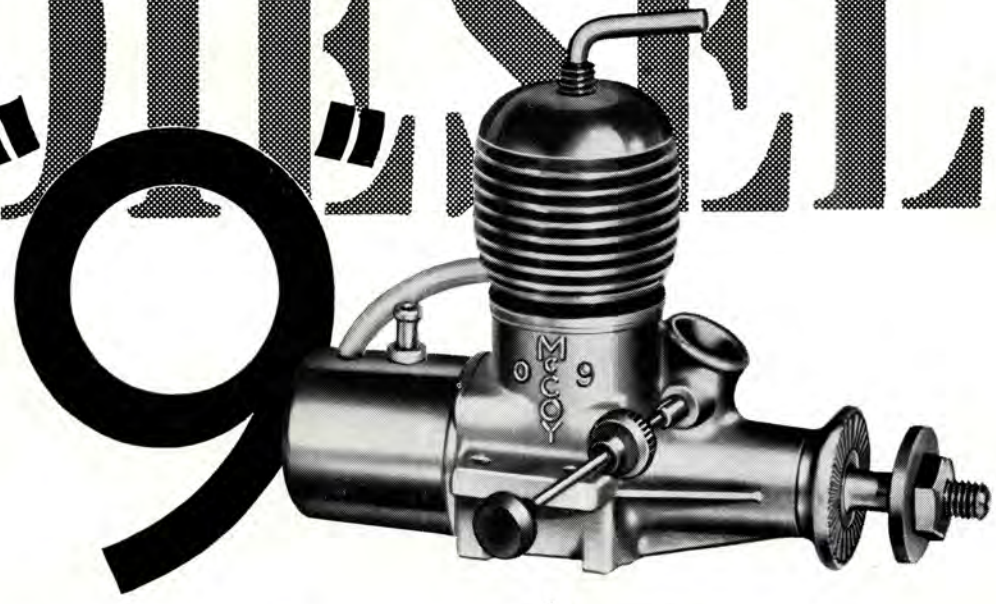

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STROKE	.460
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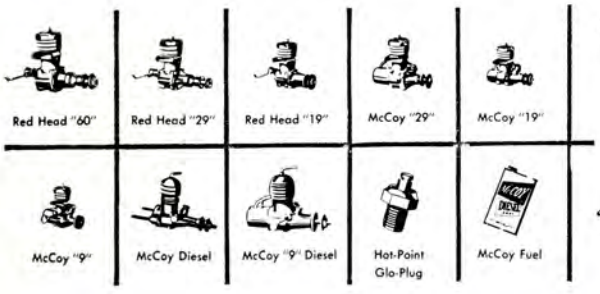

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OK CUB .049 DIESEL

Disp: .049 cu. in. or .83 cc.
Height: 2 7/16"
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$5.95 *as illustrated*

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Disp: .075 cu. in. or 1.25 cc.
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Now . . . after 38 years of research and development by Charles Brebeck, designer of "OK" engines, Herkimer has come up with a series of tried and proven advanced-design diesels that can really take it.

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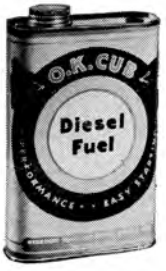
"OK" Diesels require no ignition accessories — no batteries . . . no plugs . . . no harness . . . no connecting clips. All you need is "OK" *Cub Diesel Fuel* specially developed for "OK" Cub Diesels.



Pint . . . **85c**

Exclusive shock absorber pad and pulsating contra piston (patents pending) make "OK's" the first practical long-life diesels . . .

(a) *Adjusting screw*

(b) *Cylinder head*

(c) *Shock absorber pad*

(d) *Contra piston*

(e) *Sealing ring*

(f) *Piston and connecting rod*

Compression ratio is adjusted by screw (a). Explosive force within the combustion chamber acting against the "floating" steel contra piston (d) is absorbed by springy metal shock pad (c). Thus, impact stresses are minimized and crankshaft, connecting rod, wrist pin, crankcase, cylinder and cylinder head are protected and last longer.

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78 HARTER STREET — HERKIMER, N. Y.